2/15/80

S 7560-1.1

An Economic Report to the Governor of the State of Tennessee

On the State's Economic Outlook

Volume 1

January 1980

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
TN-STAE-80		

4. Title and Subtitle	5. Report Date
ECONOMIC REPORT TO THE GOVERNOR OF THE STATE OF TENNESSEE ON THE STATE'S ECONOMIC OUTLOOK Volume 1	January 1980
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Rept. No.
Center for Business and Economic Research	
9. Performing Organization Name and Address	10. Project/Task/Work Unit No.
Tennessee State Planning Office 660 Capitol Hill Building Nashville, TN 37219	11. Contract Grant No.
12. Sponsoring Agency Name and Address	13. Type of Report & Period Covered
Economic Development Administration U.S. Department of Commerce Washington, D. C. 20230	Final
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstracts

A forecast of the economic conditions within the State of Tennessee is presented. It focuses on the way in which national economic health and national and international policy are likely to influence the State. Material is presented to compare the short-run forecast to recent periods of national recession. The long-run forecast provides data for the years 1980 through 1988.

17. Key Words	18. Distribution Statement
National and State Economic Conditions Forecast of the years 1980 through 1988	

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
UNCLASSIFIED	UNCLASSIFIED		

AN ECONOMIC REPORT TO THE GOVERNOR OF THE STATE OF TENNESSEE

On the State's Economic Outlook

Volume 1

Prepared by

CENTER FOR BUSINESS AND ECONOMIC RESEARCH
COLLEGE OF BUSINESS ADMINISTRATION
THE UNIVERSITY OF TENNESSEE, KNOXVILLE

Editors:

Stephen P. Coelen, Project Director and Director, Tennessee Econometric Model
William F. Fox, Associate Director, Tennessee Econometric Model
Glen E. Schuler, Jr., Associate Director, Tennessee Econometric Model

In Cooperation With

THE TENNESSEE STATE PLANNING OFFICE

Published By

The Tennessee State Planning Office
Nashville, Tennessee

January 1980

The preparation of this report was financed in part through the Tennessee State Planning Office and EDA Planning Grant 04–25–01355–02.

CONTRIBUTORS TO THE REPORT

AUTHORS

OVERVIEW

Stephen P. Coelen, Associate Professor of Economics

MANUFACTURING

Charles B. Garrison, Professor of Economics

ENERGY

John R. Moore, Associate Dean and Professor, Department of Economics

Glen E. Schuler, Jr., Assistant Professor of Economics

FINANCE, INSURANCE, AND REAL ESTATE

Richard M. Duvall, Head and Professor, Department of Finance

Albert L. Auxier, Associate Professor of Finance

H. Stan Banton, Assistant Professor of Finance

TRANSPORTATION, COMMUNICATIONS, AND PUBLIC UTILITIES

Frank L. Hendrix, Professor of Transportation

TRADE AND SERVICES

James R. McMillan, Associate Professor of Marketing

AGRICULTURE

Irving Dubov, Professor of Agricultural Economics

STATE AND LOCAL GOVERNMENT

Kenneth E. Quindry, Research Professor, Center for Business and Economic Research

William F. Fox, Assistant Professor of Finance

SUPPORTING CBER STAFF

Patricia Price, Research Associate

Susan Bott, Graduate Research Assistant

Stephanie Fitzgerald, Managing Editor

Jeanne McDonald, Publications Coordinator

Susannah Prescott, Editorial Assistant

Patricia Hunley, Word Processing Group Supervisor

Denise Jones, Senior Magnetic Keyboard Specialist

Patricia Flynn, Magnetic Keyboard Specialist

Brenda Henderson, Magnetic Keyboard Specialist

Fritz Rudolph, Graphic Artist

FOREWORD

An Economic Report to the Governor of the State of Tennessee for 1980 is presented in two volumes. Together they provide a comprehensive and unified evaluation of the most likely future economic environment for the nation and the State. Exceptional uncertainty, particularly at the national and international levels, draws attention to the assumptions which underlie these economic forecasts. These critical assumptions are stated in the Introduction contained in both Volume 1 and Volume 2.

Generally speaking, Volume 1 presents the overview forecast and summary sectoral analysis of both short-term (to 1981) and long-term (to 1988) forecasts. Special emphasis in Volume 1 is placed on brevity in review of potential consequences of the comprehensive forecast for the State of Tennessee. Volume 2 contains detailed evaluation of each of the major sectors of the economy accompanied by extensive tabular data in the text, plus complete statistical appendixes covering each year of the forecast period, to 1988, as well as statistical economic history, from 1969 to the present.

The report is the result of professional judgment of professors at The University of Tennessee, Knoxville, all authorities in specific areas of economic activity. Their forecasts were developed in interaction with the overall forecast, using the Tennessee Econometric Model.

Many other people, too numerous to mention specifically, have contributed to the contents of this report. The research staff extends special appreciation to the Director and staff of the Tennessee State Planning Office.

Stephen P. Coelen
Project Director

David A. Hake, Director
Center for Business and
Economic Research

TABLE OF CONTENTS

Volume 1

Chapter		Page
	Foreword	v
1	Introduction	1
2	The Outlook for the Tennessee Economy	5
	Introduction	5
	Significant Features of the Tennessee Forecast	7
	The National Outlook	14
	The National Climate for Economic Growth	19
	Monetary Policy	20
	U.S. and OPEC Energy Policies	26
	Fiscal Policy	29
	The 1980 State Downturn--How Serious?	30
3	The Outlook for Specific Industry Groups in the Tennessee Economy	41
	Manufacturing	41
	Energy	44
	Finance, Insurance, and Real Estate	47
	Transportation, Communications, and Public Utilities	51
	Trade and Services	54
	Agriculture	58
	State and Local Government	61

Volume 2

	Foreword	v
1	Introduction	1
2	Manufacturing	5
	Introduction	5
	Cyclical Responsiveness of Tennessee Manufacturing	5
	Short-Term Forecast	11
	Long-Term Forecast	16
	The Importance of Policy	24
3	Energy	25
	Sector Response in Historical Perspective	25
	National Outlook	28
	Short-Term Forecast	30
	Long-Term Forecast	34
	A Short Note on Policy Perspectives	41

TABLE OF CONTENTS

Volume 2 (Continued)

Chapter		Page
4	Finance, Insurance, and Real Estate	45
	Finance and Banking	45
	The Historical Record of the FIRE Sector	45
	FIRE Short-Term Forecast	48
	FIRE Long-Term Forecast	52
	FIRE Subsector: Insurance	54
	Life Insurance Short-Term Forecast	54
	Life Insurance Industry Long-Term Forecast	59
	Property and Liability Insurance Short-Term Forecast	62
	Property and Liability Long-Term Outlook	65
	FIRE Subsector: Real Estate	68
	Real Estate Short-Term Forecast	68
	Real Estate Long-Term Forecast	72
5	Transportation, Communications, and Public Utilities	75
	Introduction	75
	Sector Response to Economic Downturns	76
	Short-Term Forecast	82
	Long-Term Forecast	85
	State Policy Perspectives	89
6	Trade and Services	93
	Short-Term Analysis	93
	Trade Forecast through 1981	95
	Services Forecast through 1981	101
	Long-Term Analysis	103
	Trade Forecast through 1988	108
	Services Forecast through 1988	112
7	Agriculture	115
	Short-Term Forecast	115
	Economic Slowdown	115
	Export Demand	116
	Input Costs Higher	117
	Key Item--Energy Costs	117
	Other Inputs	119
	Short-Term Projections	120
	Long-Term Forecast	123
	Long-Term Projections	126
8	State and Local Government	129
	Short-Term Forecast	129
	Government Sector in Economic Slowdown	130
	Government Contribution to Gross State Product	137

TABLE OF CONTENTS

Volume 2 (Continued)

Chapter		Page
8	Wages and Salaries	137
	Public Employment	141
	Long-Term Forecast	141
Appendix Tables		143
Appendix A: Tennessee Econometric Model Forecast Data (1979-1988)		145
Appendix B: Tennessee Econometric Model Historical Data (1969-1978)		167

LIST OF TABLES

Volume 1

Table		Page
1	Tennessee Selected Indicators	8

Volume 2

Table		Page
1	Growth of Manufacturing Employment in Tennessee and the United States	7
2	Sensitivity of Manufacturing Employment to Cyclical Fluctuations, Tennessee and the United States . .	8
3	Change in Tennessee Employment During Periods of Economic Recession and Economic Expansion: Selected Manufacturing Industries, 1973-1980 . .	17
4	Tennessee and United States Manufacturing Jobs by Industry, 1960 and 1979	23
5	Energy Comparisons: Tennessee and the United States	26
6	Tennessee Energy Prices	32
7	Tennessee Energy Consumption	33
8	Comparisons of United States and Tennessee Total Energy Consumption and Total Energy Consumption to Real Output Ratio	35
9	Tennessee Average Annual Growth Rates of Energy Prices	37
10	Comparisons of Tennessee Average Annual Energy Consumption Growth Rates by Energy Type	39
11	Actual and Estimated Purchases of Ordinary Life Insurance in Tennessee	55
12	Estimated Direct Written Tennessee P&L Insurance Premiums	67

LIST OF TABLES

Volume 2 (Continued)

Table		Page
13	Tennessee Transportation, Communications, and Public Utilities, Selected Economic Variables, 1979-1988	83
14	Recent and Short-Term Tennessee Retail Sales	96
15	Composition of Real Personal Consumption Expenditures in the United States, 1960, 1970, and 1980	102
16	Tennessee Gross State Product by Sector, 1978-1981	104
17	Tennessee Employment by Sector, 1978-1981	105
18	Composition of Real Personal Consumption Expenditures, 1975, 1980, and 1985	109
19	Tennessee Retail Sales, 1980, 1984, and 1988	110
20	Average Annual Percent Change in Real Growth, Trade and Services Sectors	113
21	Tennessee Agriculture Sector, Selected Economic Variables, 1978-1981	121
22	Tennessee Agriculture Sector, Selected Economic Variables, Long-Term Forecasts	127

LIST OF FIGURES

Volume 1

Figure		Page
1	National Productivity	12
2	Quarterly GNP Economic Forecasts	15
3	Quarterly National Unemployment Rate Forecasts	16
4	Quarterly GNP Deflator Index Forecasts	17
5	Behavior of National Money Supply (M1) in Recessions	22
6	Behavior of National Prime Interest Rate in Recessions	23
7	Residential Rates for Electrical Service	28
8	Behavior of Tennessee Gross State Product in Recessions	33
9	Behavior of Tennessee Unemployment Rate in Recessions	34
10	Behavior of Tennessee Durable Goods Output in Recessions	35
11	Behavior of Tennessee Nondurable Goods Output in Recessions	36
12	Relation of Tennessee Gross State Product to U.S. Gross National Product	37
13	Relation of Tennessee Unemployment Rates to U.S.	38
14	Relation of Tennessee Durable Goods Output to U.S.	39
15	Relation of Tennessee Nondurable Goods Output to U.S.	40

Volume 2

Figure		Page
1	Tennessee Manufacturing Employment, 1960-1969	12

LIST OF FIGURES

Volume 2 (Continued)

Figure		Page
2	Tennessee Manufacturing Employment, 1969-1979 and Forecast, 1980-1981	15
3	Tennessee Durables Manufacturing Employment Changes by Industry, 1979, 1980, and 1981	18
4	Tennessee Nondurables Manufacturing Employment Changes by Industry, 1979, 1980, and 1981	19
5	Tennessee Durables Manufacturing Employment Gains by Industry Forecast: 1980 to 1988	20
6	Tennessee Nondurables Manufacturing Employment Gains by Industry Forecast: 1980 to 1988	21
7	Energy Usage by Sector in BTU's, Tennessee	29
8	Percent Changes in Current Dollar Gross State Product and Transportation, Communications, and Public Utilities Output	77
9	Average Annual Wage and Salary Percent Changes for All Sectors and Transportation, Communications, and Public Utilities	78
10	Current Dollar Gross State Product and Transportation Communications, and Public Utilities Output	79
11	Employment Percent Changes for All Sectors and Transportation, Communications, and Public Utilities	80
12	Disposable Personal Income and Sales	99
13	Growth Rates for Current Dollar State and Local Government Expenditures	132
14	State and Local Government Expenditures as a Percent of Gross State Product	133
15	Real State and Local Government Expenditures	134
16	Growth Rates for State and Local Tax Revenues	136
17	Real State and Local Government Tax Revenues	138

CHAPTER 1

INTRODUCTION

An Economic Report to the Governor of the State of Tennessee embodies the annual economic forecast of the Tennessee Econometric Model. It is a Report made this year in an environment laden with uncertainty. While national forecasts have been uniformly pessimistic, other preliminary data on the third quarter of 1979 (1979.3) are contradictory, for example, showing increases in output, profits, and sales. In the beginning of the fourth quarter, on October 6, the Board of Governors of the Federal Reserve Bank announced a new policy of monetary control that does not resemble any prior policy with which the country has had experience. Further, on December 13, several members of the Organization of Petroleum Exporting Countries (OPEC) announced a 33 percent price hike on foreign oil accounting for $6 per barrel. Indications from other OPEC nations suggest further price hikes in the near future. If any single conclusion is clear, it is that the economy is in a dramatic state of unrest.

The 1980 Economic Report contains a forecast consistent with all the above factors, except the most recent oil price increases. It sorts out the diverse national data, determining what factors directly or indirectly influence Tennessee. The direct effects generally alter prices of inputs used in the production of the State's output while indirect effects influence either the competitiveness of other national firms producing similar outputs or the level of aggregate national demand. The forecast which is presented

implicitly measures changes in the economic position of the State in both the short run, 1980 and 1981, during which the nation is predicted to move into and out of a recession and the long run, through 1988.

The short-run forecast calls for a 0.01 percent decline in the real value of Tennessee output in 1980 and a 3.5 percent increase in output in the 1981 rebound. The long-run forecast presents an annual average rate of growth of 2.8 percent over the next decade. Both forecasts are presented in this and the following volume.

The organization of this year's Economic Report differs somewhat from that of previous years. The Report maintains (1) the distinction between short-and long-run forecasts, (2) the sectoral approach to specific analyses on manufacturing; energy; finance, insurance, and real estate; transportation, communications, and public utilities; trade and services; agriculture; and state and local government, and (3) the presentation of historical and forecast details. Otherwise, in order to more effectively serve the different users of the Economic Report to the Governor, the material is presented in two volumes rather than one.

Volume 1 has two major overview chapters. Chapter 2 presents the general outlook for the Tennessee and the national economies. Significant features of the economy are presented, focusing on gross state output, unemployment rates, durable and nondurable goods forecasts, and other selected policy variables. The analysis contained within the chapter focuses on the likely outcome of major economic and energy policy changes, since these are deemed most important in setting the general tone of the economy. Finally, a series of fig-

ures is presented to compare and contrast the 1979, 1980, and 1981 period with earlier national downturns of 1969 and 1970, and 1973, 1974, and 1975.

Chapter 3 contains a short description of the major trends that exist within the sectors. Emphasis is placed more on the short-run forecasts in Chapter 3 than on the long-run. Finally, where it is considered to be important, the outlines of potential future policy decisions which loom as important aspects in the economic health of specific sectors are presented.

Volume 2 contains the traditional forecasts, by industrial sector, of the Tennessee economy. These are designed to carry the most detailed industrial data which are forecast. Authors who are specifically knowledgeable of each sector present analysis of the status of these sectors in Tennessee. Each chapter is divided into a short- and a long-run focus. The general organizing theme is their comparison of the short-run forecast to historical data. Wherever relevant, a section on policy is included to foreshadow what are considered to be important future issues. Finally, in the Appendix to Volume 2 there are tables containing the detailed historical and forecast data. These cover a full twenty years of data ranging from 1969 to 1988.

CHAPTER 2

THE OUTLOOK FOR THE TENNESSEE ECONOMY

Introduction

An Economic Report to the Governor of the State of Tennessee is based on analysis and forecasts of the Tennessee Econometric Model. It provides a picture of the Tennessee economy as it was in the fourth quarter of 1979 with a forecast from that point through 1988. The Economic Report analyzes the State's economy with respect to the national economy, accepting the national and international forces that influence economic activity. This year's Report primarily analyzes the 1979, 1980, and 1981 years because these are ones for which an economic downturn is widely predicted. The Report compares the current period and short-run forecast to the downturns which occurred in the 1969-1970 and 1973-75 periods. These were the most recent years of national recession and 1979 is the expected beginning of another downturn.

The earlier recessions had very different effects in Tennessee--the 1969 recession was mild, a time of continuing growth in real State output but the 1973 recession was severe when real output in Tennessee declined on an annual basis. In the 1973 recession there was a doubling of the unemployment rate. The current forecast concludes that 1979-1980 will produce a period more like 1969 than 1973, but worse than 1969 by some margin and in some respects different from both periods. A conclusion linking the new forecast to the previous periods should be helpful to those who remember the impacts of the 1969 and 1973 downturns on their businesses and on the State.

The outlook of the Tennessee economy for 1980 is pessimistic because of the softening of the national markets in which Tennessee producers sell their output. National forecasters are now uniformly predicting a downturn in the national economy, serious enough so as to warrant labelling the downturn of their forecasts a recession. Their gloom has persisted since the second quarter of 1979, when national output declined by 2.4 percent at an annual rate. Despite the recovery in the third quarter of 1979 which has spurred output, profits and sales, the gloomy forecasts have persisted. Third quarter output increased 3.5 percent, profits increased 6.2 percent, and the retail sales of firms such as K-Mart (up 13.7 percent annually) and Sears (up 3.7 percent in November) also increased. However, the forecasters' pessimism has been consistent with other facts, such as a 4.2 percent decrease in durable goods orders in October. This index, as good a leading indicator of a long-run downturn in the economy as exists, outweighs the temporary upturn in 1979.3 (1979, third quarter). Conventional wisdom has suggested that the strong third quarter has simply delayed the eventual downturn. It has displaced the downturn one-quarter into the future without moderating or defusing it altogether. As a result, this year's Economic Report predicts a modest decline for 1980 in the real output of the State.

This is the first year since the introduction of the annual Economic Report to the Governor of the State of Tennessee that a real downturn in the economy has been predicted. Attempts to bolster the economy with falsely optimistic statements of its future will only delude individuals to invest poorly, wasting resources

and profitability in already hard times. The best service the Economic Report can give is to be an accurate document which prepares the State's economy to move into and out of the pending downturn the best way possible.

Significant Features of the Tennessee Forecast

The single most indicative series depicting the health of the Tennessee economy is the change in the gross state product (GSP). Since this is an indicator of output in all sectors, care must be taken not to double count economic activity in any significant way.* It is the State equivalent of the comparable national series, the gross national product (GNP).

The forecast in the Report suggests continual growth in the current value of gross state product,** enough so that it will double by 1987. During the decade, as shown in Table 1, gross state product will rise from $43.5 billion, the preliminary estimate of output in 1979, to $99.5 billion in 1988.

The current level of inflation is sufficiently great that it is a primary factor pushing Tennessee and the nation into the anticipated downturn. The rate of inflation is the chief economic policy target upon which the Federal Reserve Bank has been focusing.

---

* This precludes, for example, measuring output simply by the sum of all sales, since intermediate goods are sold once to a producer, repackaged in some way, and then resold as part of another good. Measuring sales would count more than the value added in the production of the good.

**This is the value of the State's output, unadjusted for current inflation.

TENNESSEE ECONOMETRIC MODEL

CONTROL SOLUTION: NOVEMBER 15, 1979

TABLE 1: TENNESSEE SELECTED INDICATORS

#	DESCRIPTION	MODEL LABEL	FORECAST DATA 1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1	TN GROSS STATE PRODUCT (MIL. DOL.)	TGSP	43496.6	47029.4	52170.2	57595.6	63153.4	69189.9	75537.9	82698.7	90791.1	99458.8
2	PERCENTAGE CHANGE		10.74	8.12	10.93	10.40	9.65	9.56	9.17	9.48	9.79	9.59
3												
4	TN GROSS STATE PRODUCT (MIL 72 $)	TGSP*	26470.1	26467.5	27399.3	28191.6	28990.3	29837.9	30666.2	31638.7	32780.5	33955.4
5	PERCENTAGE CHANGE		1.93	-0.01	3.52	2.89	2.83	2.92	2.78	3.17	3.61	3.58
6												
7	US GROSS NATIONAL PRODUCT (BIL 72 $)	GNP*	1418.5	1428.9	1482.5	1528.4	1569.1	1610.5	1651.6	1699.7	1759.3	1816.7
8	PERCENTAGE CHANGE		1.38	0.73	3.75	3.10	2.66	2.64	2.55	2.91	3.51	3.26
9												
10	TN PERSONAL INCOME (MIL. DOL.)	TPYC01	31797.8	35098.3	38933.7	42906.2	46965.2	51274.7	55903.3	61144.2	67053.8	73500.1
11	PERCENTAGE CHANGE		11.46	10.38	10.93	10.20	9.46	9.18	9.03	9.37	9.66	9.61
12												
13	TN PERSONAL INCOME (MIL 72 $)		19424.4	19740.3	20437.6	21063.4	21672.9	22293.4	22930.0	23653.5	24508.0	25441.4
14	PERCENTAGE CHANGE		2.14	1.63	3.53	3.06	2.89	2.86	2.86	3.16	3.61	3.81
15												
16	US PERSONAL INCOME (BIL 72 $)		1171.5	1188.9	1231.7	1269.4	1306.7	1344.9	1382.6	1422.0	1468.9	1518.7
17	PERCENTAGE CHANGE		2.32	1.48	3.60	3.06	2.94	2.92	2.81	2.85	3.30	3.39
18												
19	TN EMPLOYED PERSONS (THOUS)	TNTOT	1870.8	1891.9	1921.1	1943.9	1966.1	1988.9	2011.8	2036.8	2065.7	2095.7
20	PERCENTAGE CHANGE		3.07	1.13	1.54	1.19	1.14	1.16	1.15	1.24	1.42	1.45
21												
22	US EMPLOYED PERSONS (THOUS)	UNTOT	96593.	97355.	99124.	100594.	102128.	103621.	105002.	106419.	107931.	109435.
23	PERCENTAGE CHANGE		2.35	0.79	1.82	1.48	1.52	1.46	1.33	1.35	1.42	1.39
24												
25	TN UNEMPLOYMENT RATE	TNUNR	6.0	7.1	6.9	6.8	6.7	6.5	6.4	6.2	5.9	5.4
26												
27	US UNEMPLOYMENT RATE	UEUNR	6.0	7.4	7.3	7.2	7.0	6.8	6.6	6.3	6.0	5.5
28												
29	IMPLICIT DEFLATOR, GSP	UDGSP	164.3	177.7	190.4	204.3	217.8	231.9	246.3	261.4	277.0	293.0
30	PERCENTAGE CHANGE		8.64	8.13	7.16	7.30	6.63	6.45	6.23	6.11	5.96	5.80
31												
32	IMPLICIT DEFLATOR, GNP	UDGNP	165.7	179.7	193.3	208.0	222.1	236.7	251.8	267.8	284.4	301.4
33	PERCENTAGE CHANGE		9.01	8.45	7.57	7.60	6.78	6.57	6.38	6.35	6.20	5.98
34												
35	TN MFG OUTPUT / EMPLOYEE (THOUS 72 $)		17.9	17.9	18.5	19.1	19.6	20.1	20.5	21.0	21.6	22.2
36	PERCENTAGE CHANGE		2.21	-0.30	3.79	2.88	2.60	2.45	1.98	2.46	2.88	2.79
37												
38	US MFG OUTPUT / EMPLOYEE (THOUS 72 $)		16.9	17.2	17.8	18.3	18.8	19.3	19.9	20.6	21.4	22.1
39	PERCENTAGE CHANGE		0.30	2.16	3.40	2.63	2.79	2.97	2.92	3.45	3.75	3.28
40												
41	TN PER CAPITA INCOME ($)	TPYPC	7228.	7911.	8715.	9534.	10363.	11231.	12149.	13177.	14322.	15570.
42	PERCENTAGE CHANGE		10.39	9.45	10.16	9.39	8.70	8.38	8.17	8.46	8.69	8.71
43												
44	TN POPULATION (THOUS.)	TPOP	4399.	4436.	4467.	4500.	4532.	4565.	4601.	4640.	4682.	4721.
45	PERCENTAGE CHANGE		0.97	0.85	0.69	0.74	0.70	0.73	0.79	0.85	0.89	0.83

SOURCE: TENNESSEE ECONOMETRIC MODEL, CENTER FOR BUSINESS AND ECONOMIC RESEARCH, UT-KNOXVILLE.

And while the pricing policies of OPEC and other international sellers have been partially responsible for our inflationary spiral, our foreign trade partners argue that their price increases have been necessary precisely for the purpose of offsetting the fall in their real income associated with continuing U.S. inflation and recurrent devaluations of the dollar.

National forecasters predict no dramatic short-term relief from this inflationary trend, whereas the prices implicit in evaluating the gross national product* are shown by the deflator to have increased by 9 percent in 1979. They will increase by nearly as much, 8.5 percent, in 1980 before dropping nearly a full point to 7.6 percent in 1981. From there they are expected to remain high throughout the duration of the rebound from the current downturn. They will moderate slowly during the remainder of the decade.

The same kind of inflationary pressure which hits the nation also plagues Tennessee. Inflationary pressures are among the easiest to pass through an open economy like ours because of the heavy trading among the states in finished products.** The table of significant indicators bears out the similarities between U.S. and State gross product deflators. In Tennessee, a small one-year drop is anticipated in the growth of the gross product deflator, from 8.6

---

*This is as opposed to prices charged for consumer purchases, which are reflected in the consumer price index. The latter, as expected, increases faster than the GNP deflator.

**This is partly belied apparently by regional price indices. Looking at the urban family budget index among areas for comparable baskets of goods, recently Nashville was registered at an index value of 89 compared to an index of 119 for Boston. However, the yearly rates of growth are comparable between the places, and the difference in levels is largely accounted for by differences in the price of housing.

percent to 8.1 percent in 1980, followed by a larger decline in its growth rate in 1981 to 7.2 percent. This precedes a year of relative stability and then a long-term, gradual dwindling of the inflationary rate. The consequence of slower-than-average growth in current dollar value of the State product in 1980, coupled with the continuing high 1980 inflation, is a decline in the real value of State output for 1980. This is measured in millions of constant dollars, expressed in terms of the purchasing power of the 1972 dollar. This year of decline is followed by a strong rebound into 1981 of 3.5 percent growth, a number higher than any expected during the early 1980's but small in comparison to the growth rates of the 1970's and 1960's. The remaining 1980's are expected to drop back to growth in the high 2 percent range, with an upward drift into the 3 percent range by the late 1980's, consistent with national and state demographic trends.

The 1980 decline in real output is the prime manifestation of the projected economic downturn for the State. It is a very modest decline, more representative of a steady-state economy than of a declining economy. Yet its magnitude is hidden by the annual nature of the forecast. On a quarterly basis, the downturn would look much more pronounced and visible. Projected output is expected to decline at a much more rapid rate in the first and second quarter, followed by a relatively stable third quarter and a rebound late in 1980. This will cause short-run cyclical difficulties for the State, for example in collecting revenue from sales taxes. In the downturn, the elasticity of State tax revenues declines sharply, causing problems for the State. Over time, because the State does not make up later for lost revenue in the downturn, the public sector declines

in real terms. More significantly it declines in relative terms compared to the private sector. These issues are taken up in summary in the next chapter and in detail in the section on the government sector in Volume 2 of the Economic Report.

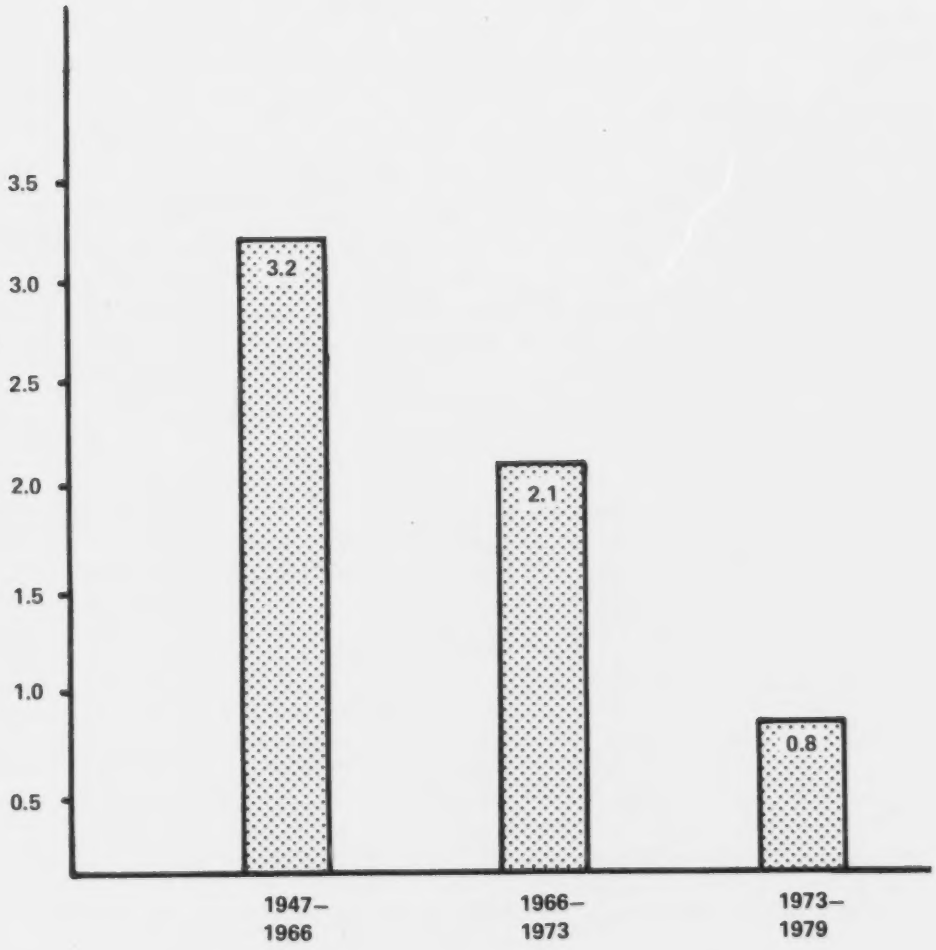
The decline in real output is nonetheless associated with some slight growth in employment in 1980. Although seriously down from its trend rate of increase of 3.07 percent in 1979, it is suggested by the forecast in the Economic Report that continuing growth is expected in the order of magnitude of 1.13 percent, the lowest growth (by a small margin) in the decade. Coupled with continuing population growth through migration and higher rates of labor force participation of women, the increase in employment is insufficient to maintain the (relatively) low annual unemployment rate of 6 percent reached in 1979, itself up from 5.8 percent in 1978 because of the cycle in the last half of the year.

The result of the downturn, expectedly, is a decline in productivity of the Tennessee labor force of about $50 per employee (1972 constant dollars). This is not significant as a single number. It is, however, a dramatic drop when multiplied by the number of employees. It is also significant when the productivity decline is compared to trend growth rates. These have shown productivity to have increased generally since World War II at compound rates averaging 2.5 percent annually. The productivity decline is particularly significant in the context of past high productivity growth when it is put in chronological perspective. It comes on the tail end of a succession of long-term reductions in the positive productivity growth which the U.S. and Tennessee have experienced. In the nation, productivity

has declined over the years as shown in Figure 1, from 3.2 percent during the years 1947-1966, to 2.1 percent from 1966-1973, and finally to 0.8 percent from 1973-1979.

FIGURE 1

NATIONAL PRODUCTIVITY
(Compound Annual Rates of Growth)



SOURCE: **Fortune**, December 3, 1979, p. 69.

Such productivity is a function of the general business cycle. It falls in the downturns when employers do not lay off all of their

unproductive employees because of training and search costs which they would later incur in replacement of labor during an eventual upturn. This pattern is reinforced as well because employers share in payment of unemployment compensation costs. Still, it is an unsettling short-term forecast to observe the decline in Tennessee productivity which has been a critical factor for the State in holding its own against other states. It is unsettling for the nation in dealing with export markets. Over the long run, it is projected by the Economic Report that Tennessee productivity (historically higher than the U.S.) will fall relative to U.S. productivity. However, Tennessee productivity does not decline so rapidly that it will fall behind the U.S. by the end of the next decade. There will be nevertheless almost a complete convergence between the two series.*

After accounting for changes in employment and productivity, the factors jointly imply an increase in total personal income within the State, even in real terms. Personal income is projected to grow over the pending downturn by as much as 1.6 percent in 1980, down from 2.1 percent in 1979. A rebound from the downturn results in above-trend income growth in 1981 from which it settles into a long-

---

*In fact, the data on Tennessee productivity presented in Table 1 is consistently high relative to the U.S. because it includes as part of manufacturing output, expenditures by manufacturers on non-manufacturing activities such as advertising, insurance, telephone, research, overhead, etc. The U.S. data are derived from the National Income and Product Accounts of the Department of Commerce and the Tennessee data are derived from the value added series of the Annual Survey of Manufactures, Bureau of the Census. The effect of this noncomparability is to understate the U.S. levels of productivity by approximately 26 percent (based on calculations for 1976) or conversely to overstate Tennessee approximately by 26 percent.

term projection, reflecting demographic change, energy price and availability, and other factors, of 2.8 to 3.0 percent annual growth.

The National Outlook

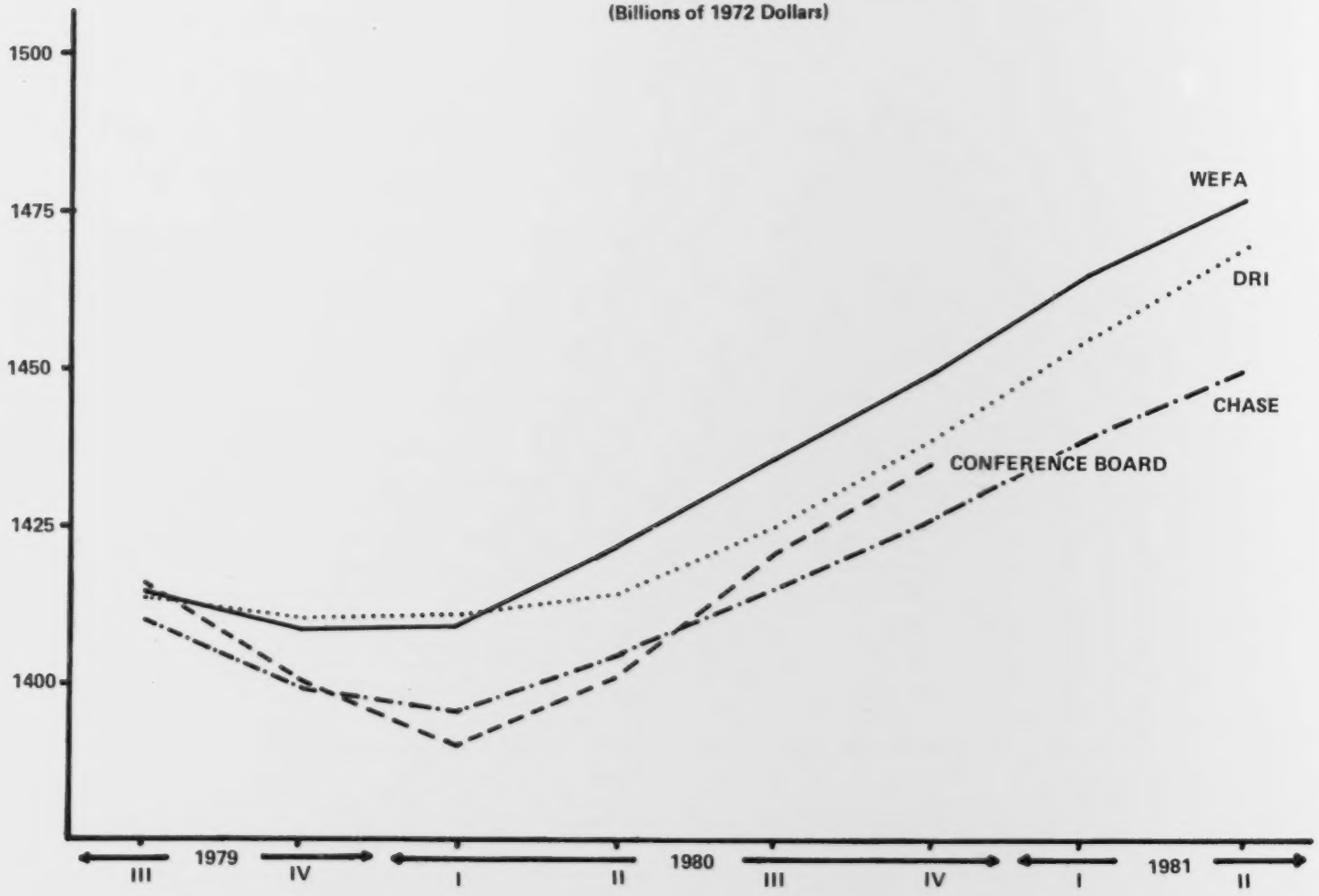
As argued earlier, there is an uncanny consistency to the national forecasts even in these uncertain times--the major forecasts uniformly point to an imminent economic downturn. There is, of course, some variation among the alternate views. Some are more pessimistic than others. Some foreshadow a potential industrial policy of laying off unproductive workers in which case high unemployment rates will follow; others argue that the economy will find an outlet in industrial retention of employees, letting productivity fall.

The Conference Board reports forecasts of several prominent forecasters, among whom are Data Resources, Inc. (DRI), Wharton Econometric Forecasting Associates (WEFA), Chase Econometrics, and the Conference Board itself. Forecasts of this group are shown in Figures 2, 3, and 4 comparing outlooks on gross national product, unemployment, and the gross national product deflator, respectively. The diversity of these August forecasts is as apparent as their prediction of a downturn.

All show unemployment rates increasing approximately from 6 percent to over 7 percent in the next year, although the forecasts of DRI, the Conference Board, and WEFA are more optimistic than the Chase Econometric forecasts. All similarly show at least one-quarter of decline in real national output, although WEFA and DRI then show an immediate return to growth. The Conference Board forecast, optimistic in terms of the national unemployment rate, is interestingly

FIGURE 2

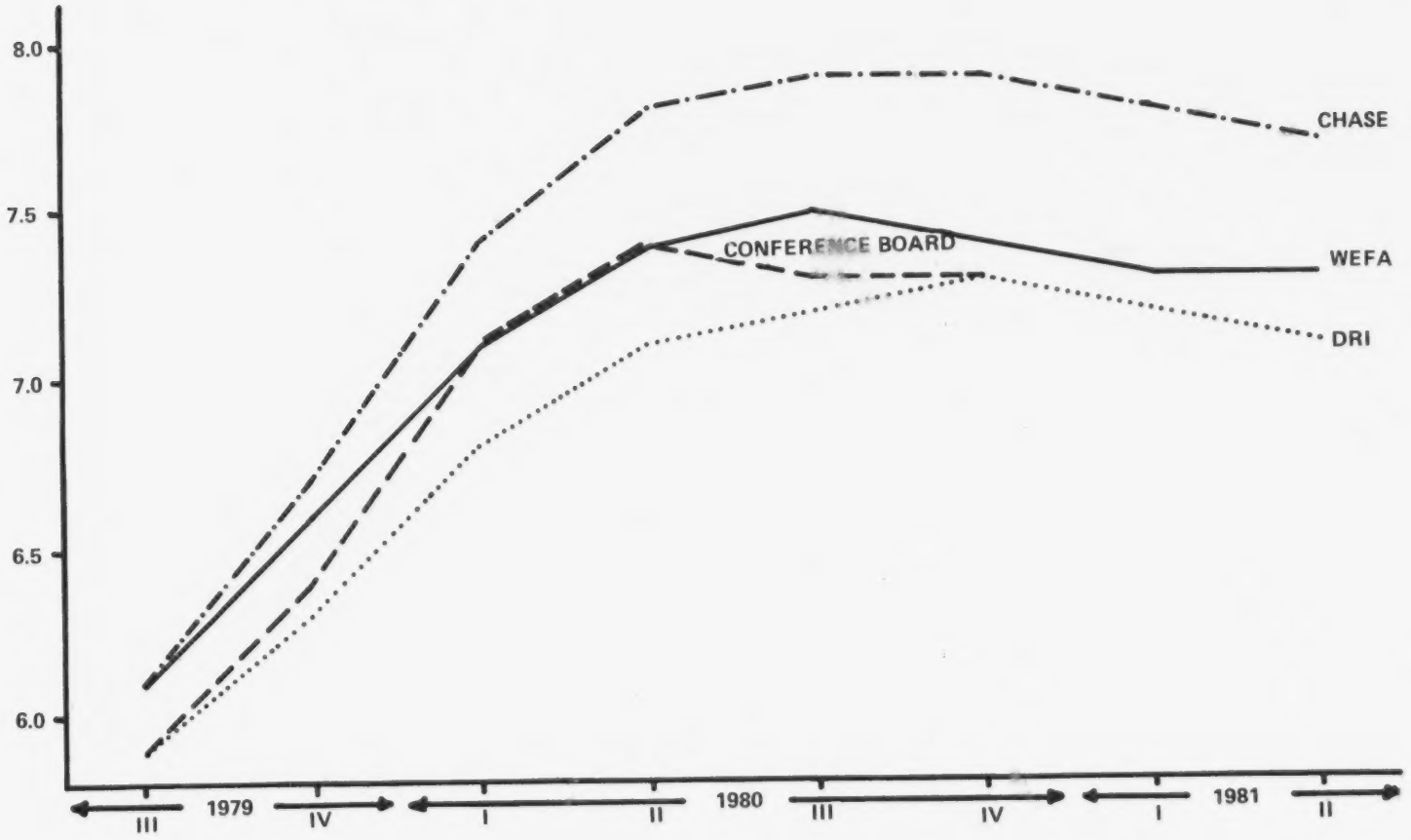
QUARTERLY GNP ECONOMIC FORECASTS
(August 1979)
(Billions of 1972 Dollars)



SOURCE: "Statistical Bulletin," The Conference Board, Vol. 12, No. 9, September 1979, p. 8–9.

FIGURE 3

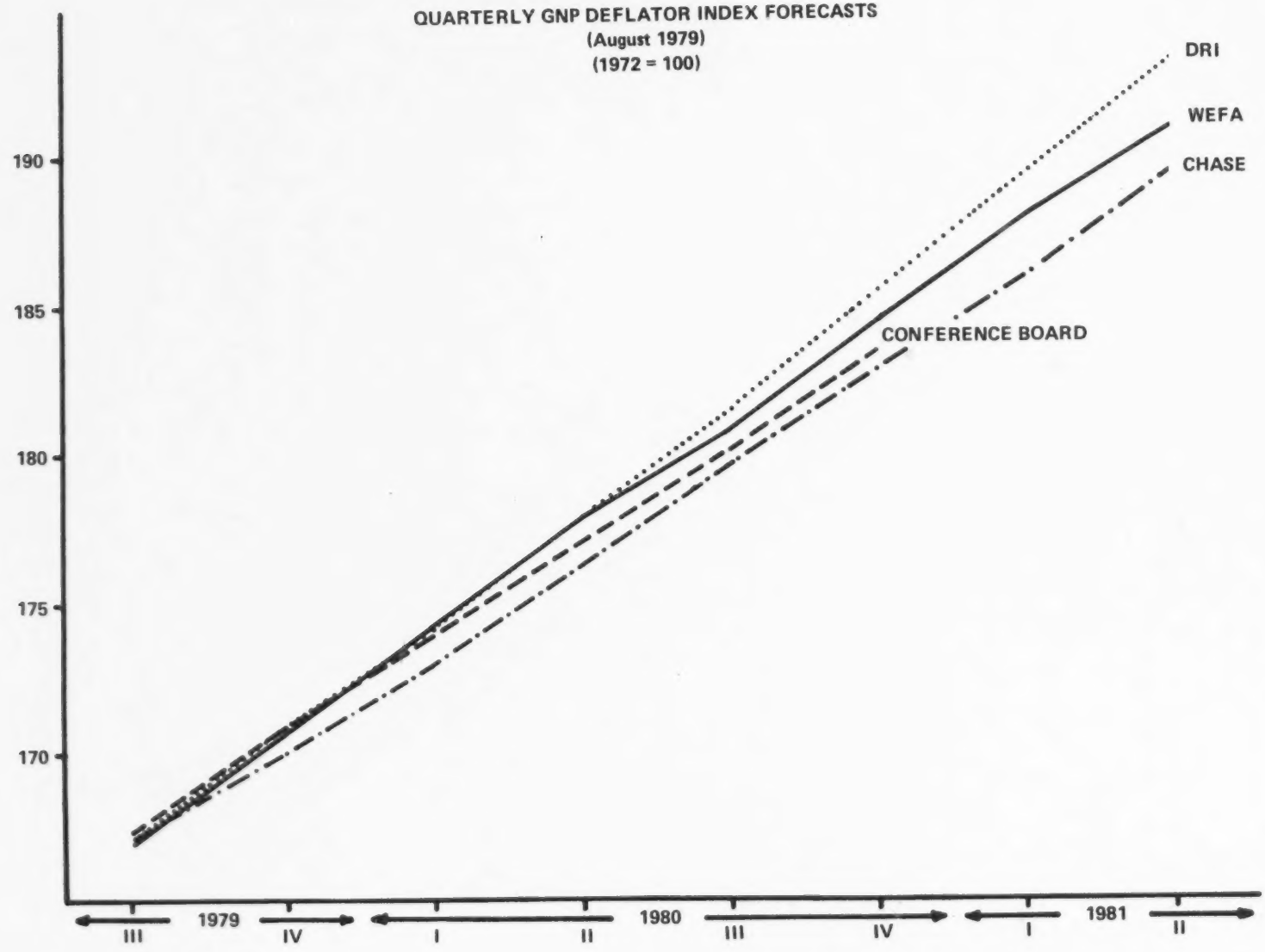
QUARTERLY NATIONAL UNEMPLOYMENT RATE FORECASTS
(August 1979)
(Percent)



SOURCE: "Statistical Bulletin," The Conference Board, Vol. 12, No. 9, September 1979, p. 8–9.

FIGURE 4

QUARTERLY GNP DEFLATOR INDEX FORECASTS
(August 1979)
(1972 = 100)



SOURCE: "Statistical Bulletin," The Conference Board, Vol. 12, No. 9, September 1979, p. 8–9.

the most pessimistic in terms of output forecasts. Their forecast scenario obviously fits the general model of increasing under-employment and falling productivity as industry retains the marginally productive rather than laying them off. All forecasts call for continuing inflation on an unchanging course.

The national forecasts presented in Figures 2, 3, and 4 were produced before October 6, the day the Federal Reserve Bank policies changed to reflect the new stronger Volcker policies. None are up-to-date evaluations of the way that the economy will respond to the newest and most revolutionary economic policy recently instituted. We have had no historical experience with such policies that have so significantly raised interest rates, for example, to the 15-3/4 percent prime rate recently recorded.

There is general agreement that the effect of the tight monetary policies will be to further constrain the economy, fuelling unemployment and hopefully slowing the rate of inflation. How much unemployment will be gained to accomplish what percent reduction of inflation is the unanswered question. This initiative is one to which there has yet been only a partial response. On October 8, 1979, only two days after the Federal Reserve's policy changed, WEFA forecast changes in the national economy suggesting several changes in the next year's, short-term forecast:

- a reduction in real output in 1980 by $12.9 billion
- an increase in the unemployment rate by 0.05 percent
- a slight increase in the inflationary rate because of increased costs of capital spending.

Their forecast, however, neglects to show an improvement in exchange rates which might be forthcoming because of international control of the dollar's stability. These improvements, should they occur, would significantly reduce the U.S. balance-of-payments problem, aid our negotiations with OPEC on future energy prices, and have a generally positive, pervasive influence on the rate of inflation. Until a handle on this impact is achieved there is little the forecasters can do to provide more accuracy.

In light of this concern and the fact that the long-term, annual WEFA forecast does not reflect the October Federal Reserve Bank changes, a significant caveat is placed on the body of the current national analysis. Although the elements of the national forecast presented herein are too optimistic, the Tennessee forecast presented herein reflects the downturn anticipated because of the October 6 changes in monetary policy. Nonetheless, where comparisons between the national and State forecasts are made in this Report, the national economy will look artificially strong.

The National Climate for Economic Growth

This year presents more difficulties to the economic forecaster than any in recent times. The Federal Reserve's changing monetary policy has already been mentioned, but other factors also abound.

A major uncertainty is created by the recent Middle-East crisis led by the Iranian confrontation. This will affect OPEC relations with the United States for some time into the future. At a time when the control which OPEC could muster on the U.S. economy was only beginning to be understood, the new political instability

accompanying the Iranian situation voids all that has been learned. The foreign energy uncertainty, coupled with other uncertainties about domestic Tennessee energy in a year in which Tennessee (TVA) electrical rates are being reconsidered in broad new conceptual developments, makes energy a critical, imponderable element of the forecast.

Finally, there is more real possibility for direct confrontation this year between the Carter Administration fiscal policy and Federal Reserve monetary policy than there ever has been before. Our experience is limited in determining the relative power of the two types of policies. It is difficult to predict a winner in a struggle between the two. Monetary policy will continue to be thrust at the high, escalating and unabated rate of inflation. Fiscal policy is likely to maintain a goal of reducing unemployment, perhaps even more so in a national election year than it would otherwise. Conflict between the two could become serious.

Monetary Policy

Monetary policy of the Federal Reserve Bank Chairman Volcker has been revolutionary in at least two dimensions--(1) monetary policy will be applied over all periods, not just during economic downturns and (2) the new focus of monetary policy will be on banking system reserves rather than on interest rates (specifically the Federal funds rate). Overall the move on October 6, 1979, contained three specific provisions:

- raising of the discount rate from 12 to 13 percent
- requiring an 8 percent marginal reserve on "managed liabilities," such as Edge Act Corporations, U.S. agencies and foreign branch banks (including time

deposits, Eurodollar borrowings and Federal funds borrowing)

- enforcing policy with a trigger on reserves rather than on the Federal funds rate.

From this policy, hope arises that the growth in money supply will slow dramatically and rates of interest, e.g., the prime rate, will fall rapidly from recent all-time highs. This is considered to be true whether money supply is measured broadly to include select time deposits (the monetary definition of M2) or narrowly to include only currency and demand deposits (M1). WEFA forecasts of M1 and the prime rate are shown by quarter in Figures 5 and 6.

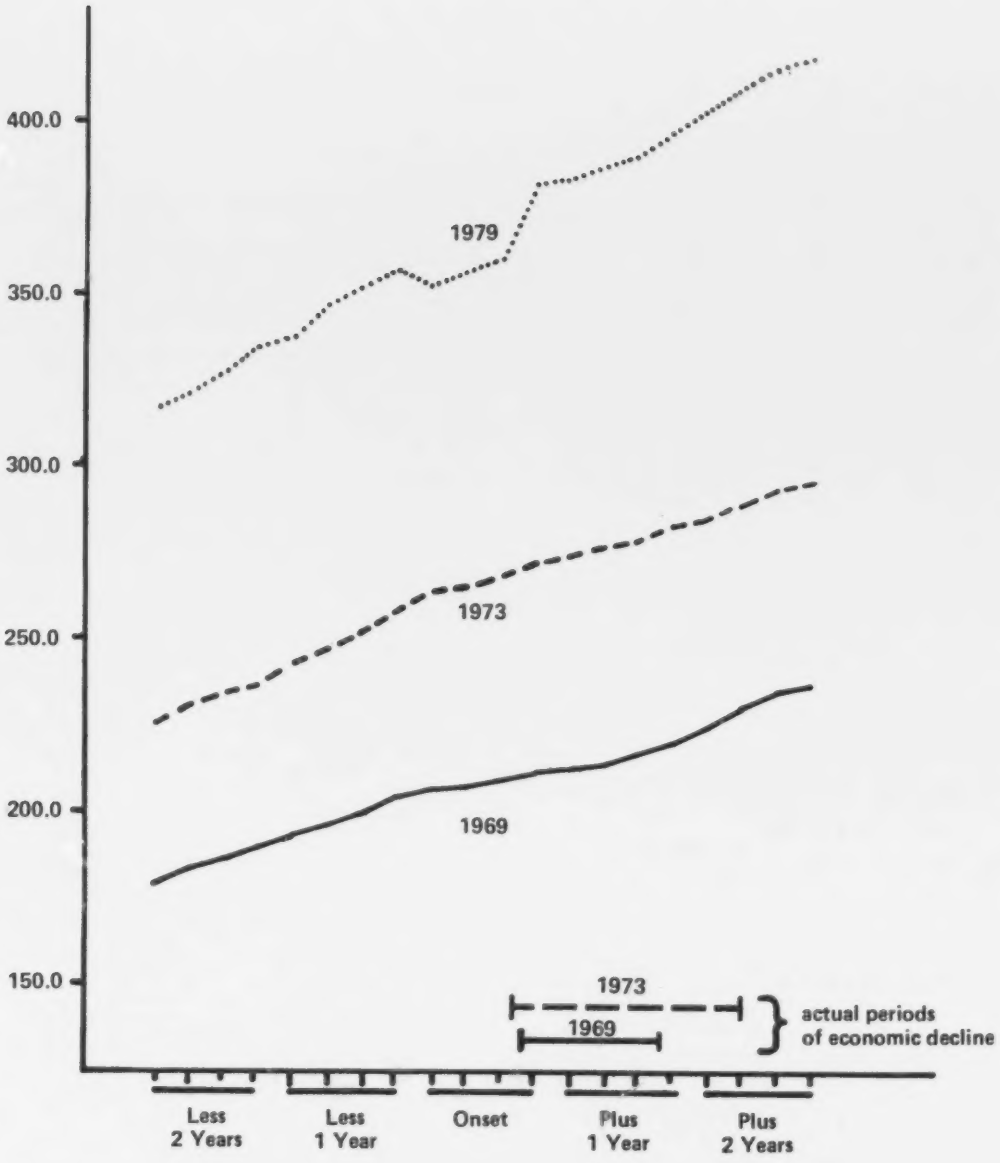
These two figures, as others presented later, show the historical and projected data respectively, around the years 1969 and 1973, and 1979. This is done to facilitate comparisons between this year's projected economic downturn and the two most recent national declines. Each line represents 5 years worth of data, centered in the different cases on the years 1969, 1973, and 1979.* The actual national downturns did not coincide with any of the calendar or fiscal years. The national decline associated with the 1969 recession occurred over the period from December 1969 through November 1970; the decline in the 1973 recession occurred in the period November 1973 through March 1975. In 1979, only time can put the historical perspective on the actual period of decline. In Figures 5 and 6, the periods of national decline for 1969 and 1973 are shown at the bottom of the figures.

---

*This implies, for example, that by the line in Figure 5 which refers to 1979 is shown the WEFA data on M1, for each of the years 1977 through 1981.

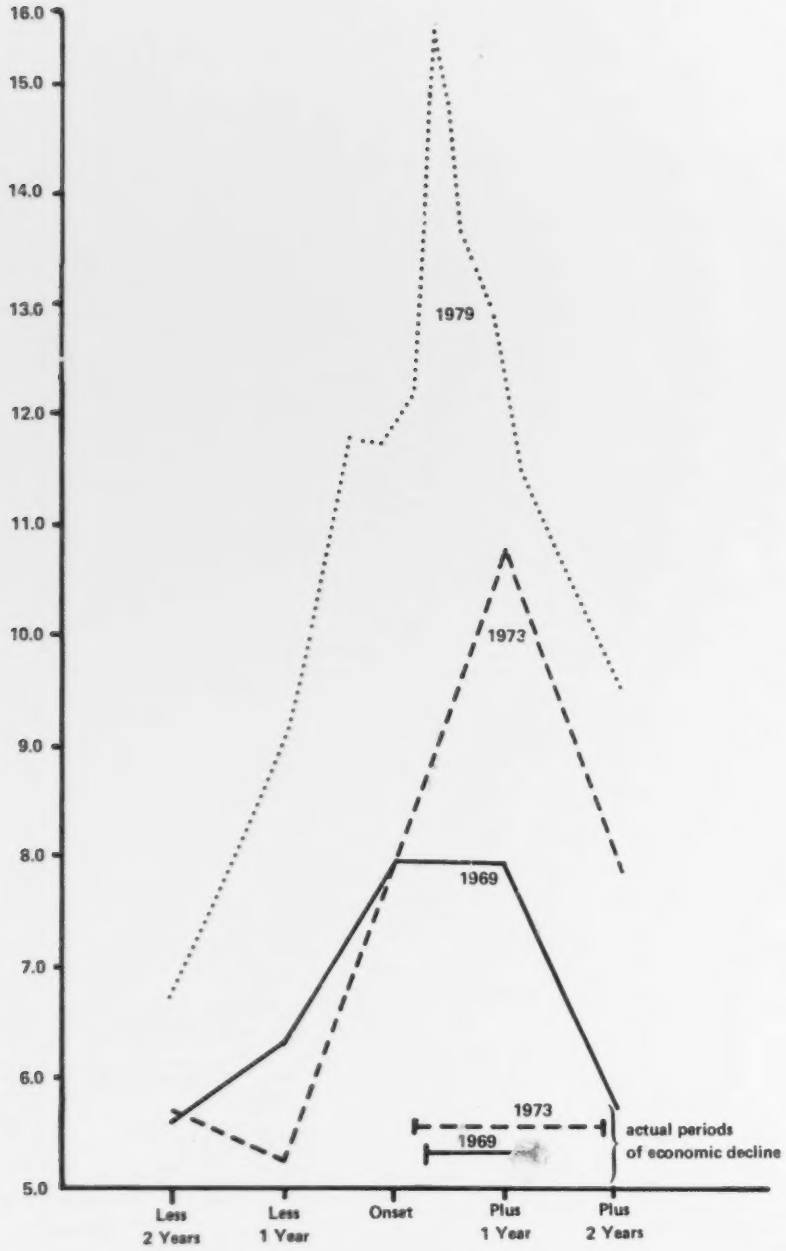
FIGURE 5

BEHAVIOR OF NATIONAL MONEY SUPPLY (M1)
IN RECESSIONS
(Billions of Dollars)



SOURCE: Historical Data – **Business Conditions Digest**, U.S. Department of Commerce, various issues; Forecast Data – Wharton Econometric Forecasting Associates, October 8, 1979.

FIGURE 6
BEHAVIOR OF NATIONAL PRIME INTEREST RATE
IN RECESSIONS
(Percent)



SOURCE: Historical Data – **Economic Report of the President 1979**, p. 250; Forecast Data – Wharton Econometric Forecasting Associates, October 8, 1979.

It is readily apparent that one of the distinctions between 1969 and 1973 was in monetary policy. In 1969 there was a diminution of the money supply, whereas in 1973 there was no departure from high quarterly growth. In 1969, the decline in the growth rates of money supply occurred before the onset of the recession and of course in 1973, it did not since there was no decline. In 1979, with the new rates of M1 growth projected to fall from 10.04 percent increase in 1979.3 to 2.43 percent in 1979.4 and to 1.62 percent in 1980.1, the trends look auspicious so that the national downturn may be more modest than the 1973-75 period of decline.

In 1980, the prime rate is projected to move smoothly down from its high of 15-3/4 percent and back into the 9 to 10 percent range within two years. While this trend is sharper, so that it is more directly analogous to the 1973 trend, the 1979-1980 experience is expected to be more like 1969 since in 1969 the money supply peaked before the onset of the downturn.

Further, and this is the area of current controversy, the national prime rate may not fall so smoothly as shown in Figure 6. Rationale for this goes back to an understanding of the Federal Reserve's purpose in tightening up the money supply. If that purpose was to break the back of the inflationary psychology that grasped the nation all through the stagflation of the 1970's, then the Fed's purpose may not be so simply served as in jacking rates to levels without precedent and then dropping them smoothly and quickly back to the original levels.

The inflationary psychology has always been "buy now while lending rates are low" and "mortgage or borrow to the hilt and allow

your income to grow to cover principal and interest payments." This psychology has proven all through the 1970's, for example, that the $30 to $40 extra investment used to buy rather than to rent a home can be turned into 1000 percent or more growth in equity when considered as a return on the additional investment. It is difficult and will be difficult to divert such thinking of investors.

The Federal Reserve Bank's policy is two-pronged. First it will reduce M1 to raise interest rates to such extremes that investors take seriously a change in federal goverment policies which historically have seemed more interested in unemployment policies than anti-inflationary policies. If prong one does not work, the Fed will drop back only slightly but maintain high rates for as prolonged a period as necessary to make investors take the new policies seriously. The national forecast depicted in Figure 6 is an implicit subscriber to the theory that the short, high interest rate policy will work. By contrast, the Economic Report's forecast is a subscriber to the national perspective that sustained high interest rates will be required. This will forestall the immediate long-term decline in interest rates, perhaps through the middle of 1980.2 or into 1980.3. At that time, the rates will begin to fall and with them the rate of inflation. Simultaneously the real growth rate will be pushed in the other direction, upward.

Such a conclusion must be recognized for its impact. Resort to the policy of sustained high interest rates will lead to a longer, more pronounced downturn, both nationally and for the state. Without it, the competitiveness of the dollar in foreign markets, our ability to withstand the pressures of OPEC, the stability of domestic money

markets, all will suffer. With sustained high interest rates there will be thousands of potential workers temporarily without jobs. As a nation and as a state we must ask ourselves whether the benefits are sufficiently high that we can bear the costs.

U.S. and OPEC Energy Policies

Energy is the second major factor which makes this year's forecast more difficult and risky relative to other years. Nationally, it has been noted for the U.S. and corroborated for Canada that the impact of an increase in $1 per barrel in foreign oil prices is a 0.5 percent increase in the national consumers' price index. Extending this logic over the period from 1973 to 1978, of the 62.2 point rise in the U.S. CPI, some 15 points of the total increase may be attributable to oil price changes. In this way foreign oil interests have accounted historically for nearly one-quarter of all recent U.S. inflation.

National forecasts are projecting 8 percent annual rates of increase in world oil prices throughout the decade. The effect of this price increase would hold U.S. growth in energy consumption to 1.4 percent annually, a slower growth than ever before experienced. Just as the energy crisis was projected to be at fault in the declining rates of productivity growth through the mid-to-late-1970's, slower growth in energy consumption may perpetuate the trend. As a nation there will be more emphasis on substituting other factors, including labor, for energy in production, causing the labor productivity to fall.

It is not reasonable to argue strongly that the U.S. has learned what to expect from future OPEC economic policies. Recently OPEC has

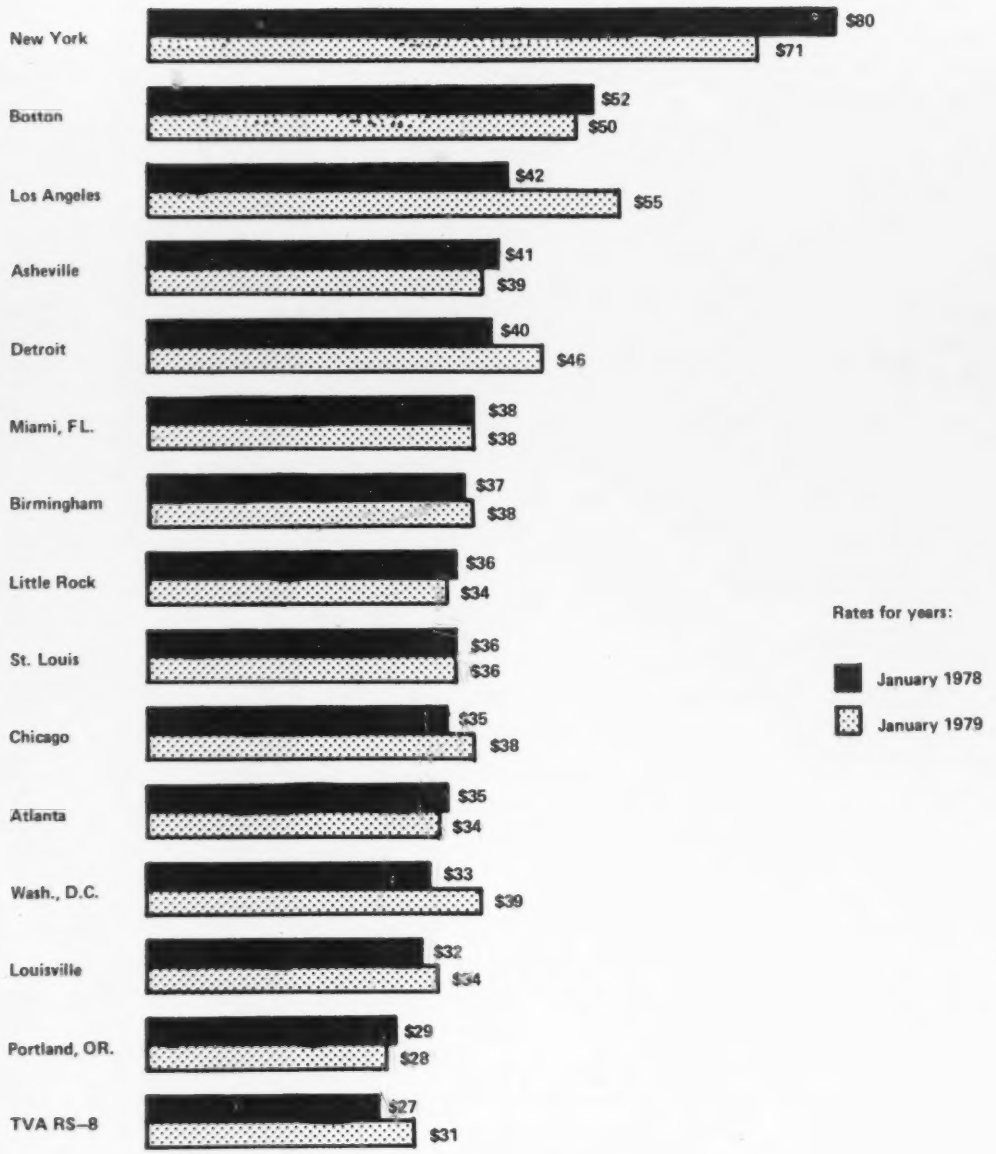
provided stability to the Middle-Eastern political and economic situation, but this may change as a result of the Iranian crisis. This major unknown has not been factored into this year's forecast and therefore the assumption is necessary that the U.S. can replace the small (6.0) percent of U.S. oil imported from Iran with oil found in other places. This must be done without significantly changing the world prices anticipated before the crisis.

In Tennessee, of course, energy prices are critical because of the dependence of many of its manufacturing producers on energy-intensive processes. Each of the shocks of major price changes in foreign oil that hit the nation eventually filter through to affect Tennessee. They directly have only a small impact on electricity prices because TVA uses very little oil for electricity production and then primarily for peaking capacity. Nevertheless, the competitive position of the State in manufacturing production depends in part on the relative prices of Tennessee and non-Tennessee energy, regardless of fuel source. Despite the oil price hikes (perhaps because of them), Tennessee electricity has lost its charm of having the cheapest electrical rates in the nation. In Figure 7 is shown a comparison of 1978 and 1979 TVA rates with non-TVA residential rates. Analysis of Figure 7 points to the slippage in typical TVA residential service rates from their spot as lowest in the nation. While TVA prices per 1000 kwh were increasing $4 between 1978 and 1979, Seattle's were unchanged, leading Seattle to lower prices than TVA supplied Tennessee in 1979.

Whether Tennessee as a sun-belt, heavy energy-producing state can move into a period of restricted energy usage and maintain its

FIGURE 7

RESIDENTIAL RATES FOR ELECTRICAL SERVICE
(Dollars per 1000 kwh)



NOTE: Bills for others are based on residential rate information obtained directly from the utilities. Bills include all currently applicable adjustments and charges except local and state sales taxes. TVA rate level RS–8 is typical of basic residential bills in TVA service area; amount may vary in particular locations due to rate level difference and application of special charges.

SOURCE: **Electricity Sales Statistics,** Tennessee Valley Authority, January1978-79.

position relative to the nation is a question yet to be answered. A recent study utilizing the Tennessee Econometric Model suggests the heavy industrial dependence on energy has been a competitive force which has enabled the State to outgrow the nation. The impact of future energy price changes will be important, whether these impact the State directly or indirectly through the nation.

Fiscal Policy

Since the Great Depression, economists have tried to forecast the impacts of year-to-year swings in fiscal policy reflected by the balance of the federal budget. What has been true historically, however, is that the underlying demographics had provided a straight-line progression slowly increasing the labor force year after year. By the mid-1970's, with the entrance of the full complement of the post-World War II baby boom into the labor market and the return to the labor force of veterans of the Vietnam War, the slow progression gave way to a rapid bulge. This has been blamed as one of the causal factors of the 1973 downturn. It now stands again as a causal factor of the projected 1979 downturn.

Michael Wachter, Professor of Economics at the University of Pennsylvania, has argued that one of the factors contributing to stagflation is the heavy baby-boom component which shows up as young labor in the job market. This youth has less job seniority and is much more mobile because of fewer family ties than the older population. The young are more likely to be laid-off or to leave one job in search of another than are the more mature. As a result, with a just com-

plete influx of the baby-boom cohort into the labor force, both structural and frictional unemployment tends to be higher than it has been historically. Wachter argues that both the administration's fiscal policies and the advice of the President's Council of Economic Advisors have overlooked the demographic trend. Fiscal policies have stressed an objective unemployment rate too low to permit it to be "non-inflationary." Wachter believes the discrepancy between the true non-inflationary unemployment rate in 1979 and the administration's target is 1.2 percentage points (a 6.2 percent unemployment rate rather than a 5 percent rate).

Should fiscal policy remain oriented to an unemployment goal and should it point at targets which are unrealistically low, there may be a growing conflict between fiscal policy and the inflation-oriented monetary policy. Never before have forecasts of the short-term economy had to deal with an issue so hotly contested on both sides. Which will win out in the short and in the long run--monetary or fiscal policy?

The 1980 State Downturn--How Serious?

In the Economic Report is forecast a decline in real Tennessee output of 0.01 percent in 1980. How serious a magnitude is this? Is the economy going to behave more like that which we experienced in 1969 or that in 1973? To gauge what could happen in Tennessee in the next recession, it is useful to review what happened in the State in those past two recessions.

During the 1969-1970 downturn the national economy peaked in December 1969, but employment kept growing in Tennessee until June

1970. From a peak of 1.6 million jobs, employment fell to 1.52 million jobs in February 1971--three months after the bottom of the downturn nationally. In that month unemployment was 5.9 percent of the labor force--the highest rate during the recession.

After February 1971, employment began growing rapidly again, surpassing its pre-recession high by June. Hence the recession was fairly mild, lasted a short time, and the recovery was very rapid in Tennessee. By the end of 1971 unemployment dropped back to its pre-recession monthly average of 3.9 to 4.1 percent.

The 1973-75 recession was more serious both nationally and in Tennessee. Nationally the cyclical peak occurred in November 1973. Nonagricultural employment continued to expand in Tennessee until April 1974, when it stood at 1.6 million jobs. It then fell steadily for eleven months to a figure of 1.45 million. About 150,000 nonagricultural jobs were lost between the peak and trough, compared to under 80,000 lost during the 1969-1970 recession.

Unemployment was a more serious problem in the 1973-75 recession; not only because of the greater number of jobs lost but also because the state's labor force was growing so rapidly. In 1974-75 more women and young workers were looking for jobs than during the 1969-1970 downturn. This served to inflate the State's unemployment figures above what might otherwise have been expected. The unemployment rate, which had been averaging between 4 and 5 percent each month, shot up to 6 percent in November 1974 and to 9 percent in January 1975. It peaked at 9.8 percent in March and fell very slowly during the rest of the year. By August 1976, it returned to its pre-recession level of about 5 percent. Although Tennessee's overall unemployment rate never

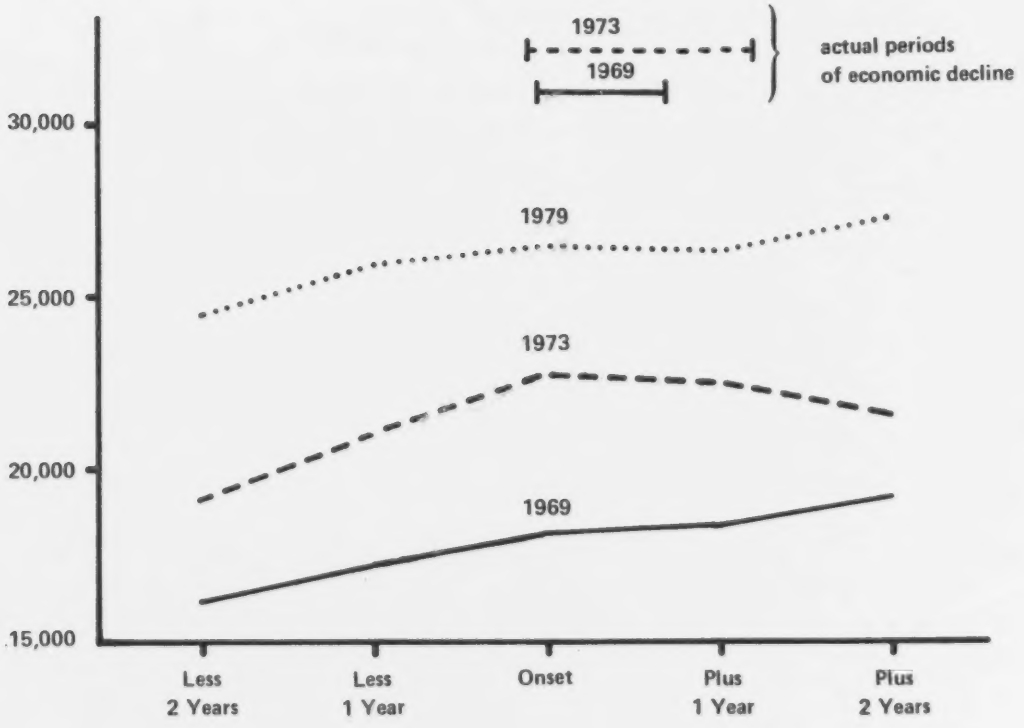
exceeded the comparable national figure for any prolonged period, its abrupt increase swamped the labor markets, even in the State's biggest cities, and led to long lines at the unemployment offices. At the height of the recession, unemployment exceeded 20 percent of the labor force in many rural counties.

During the 1969-1970 recession, personal income continued to expand in real terms. Despite accelerating inflation and the recession, most Tennessee workers remained relatively unaffected by the national slowdown. Such was not the case, however, during the 1974-75 recession. As inflation zoomed into double-digit figures in 1974, real personal income declined, both in Tennessee and nationally. The recession worsened in 1975, causing real personal income to continue its decline. The State experienced no growth in personal income from 1973 to 1975 when the effects of inflation were removed. Nearly all workers in the State, whether employed or unemployed, felt the combined effects of inflation and recession. This situation worsened the lot of every worker--not just those who were unfortunate enough to lose their jobs.

Figures 8, 9, 10, and 11 show the historical movement of key variables in 1969 and 1973 periods and in the current period. These figures focus on four primary indicators of economic health--gross state product, unemployment rate, and durable and nondurable manufactured goods output. For comparison with the U.S. economic performance during the same time periods, Figures 12, 13, 14, and 15 repeat the same four primary indicators for the major recent recessions.

FIGURE 8

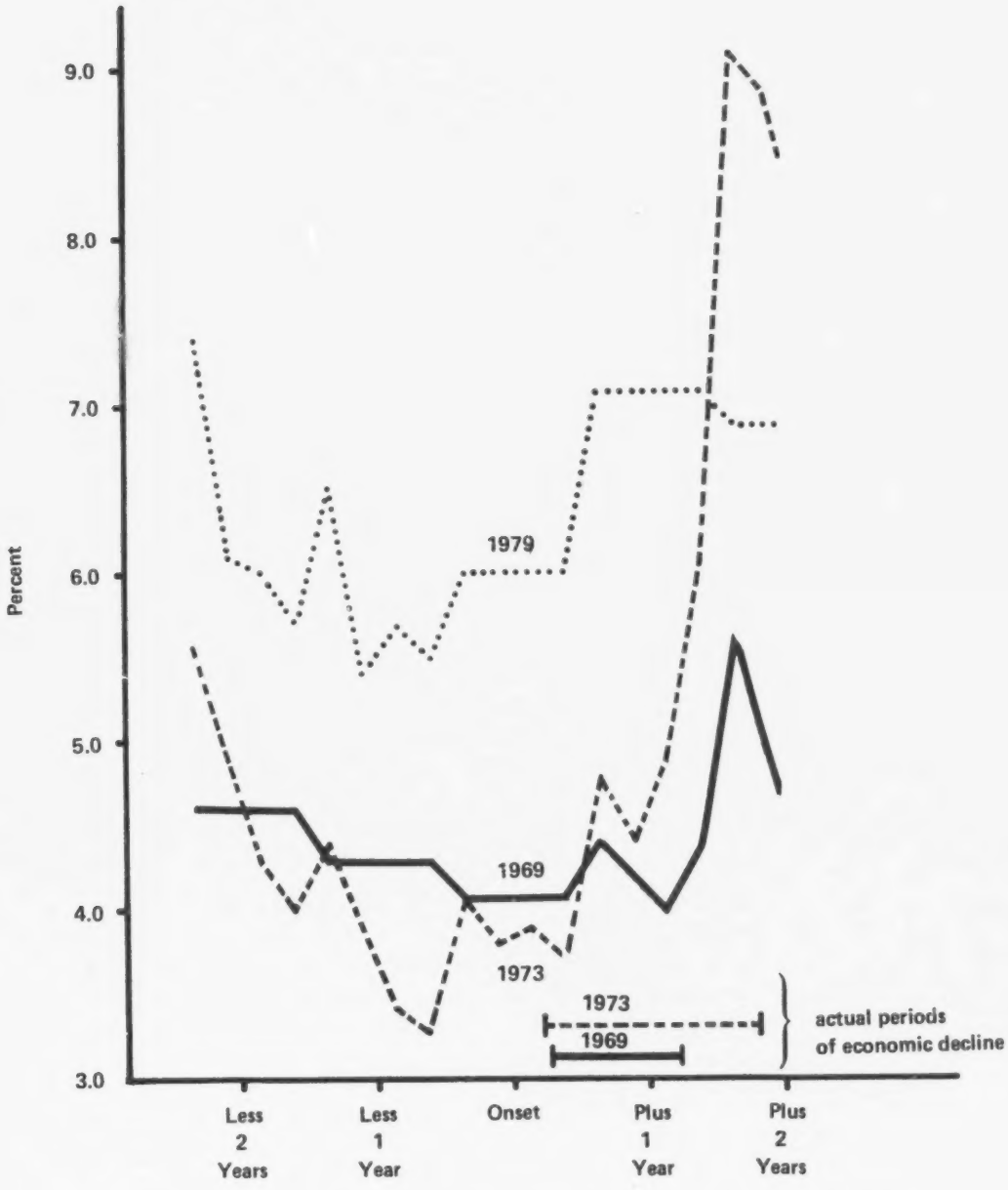
BEHAVIOR OF TENNESSEE GROSS STATE PRODUCT
IN RECESSIONS
(Millions of 1972 Dollars)



SOURCE: Tennessee Econometric Model, Historical Data and November 15, 1979.

FIGURE 9

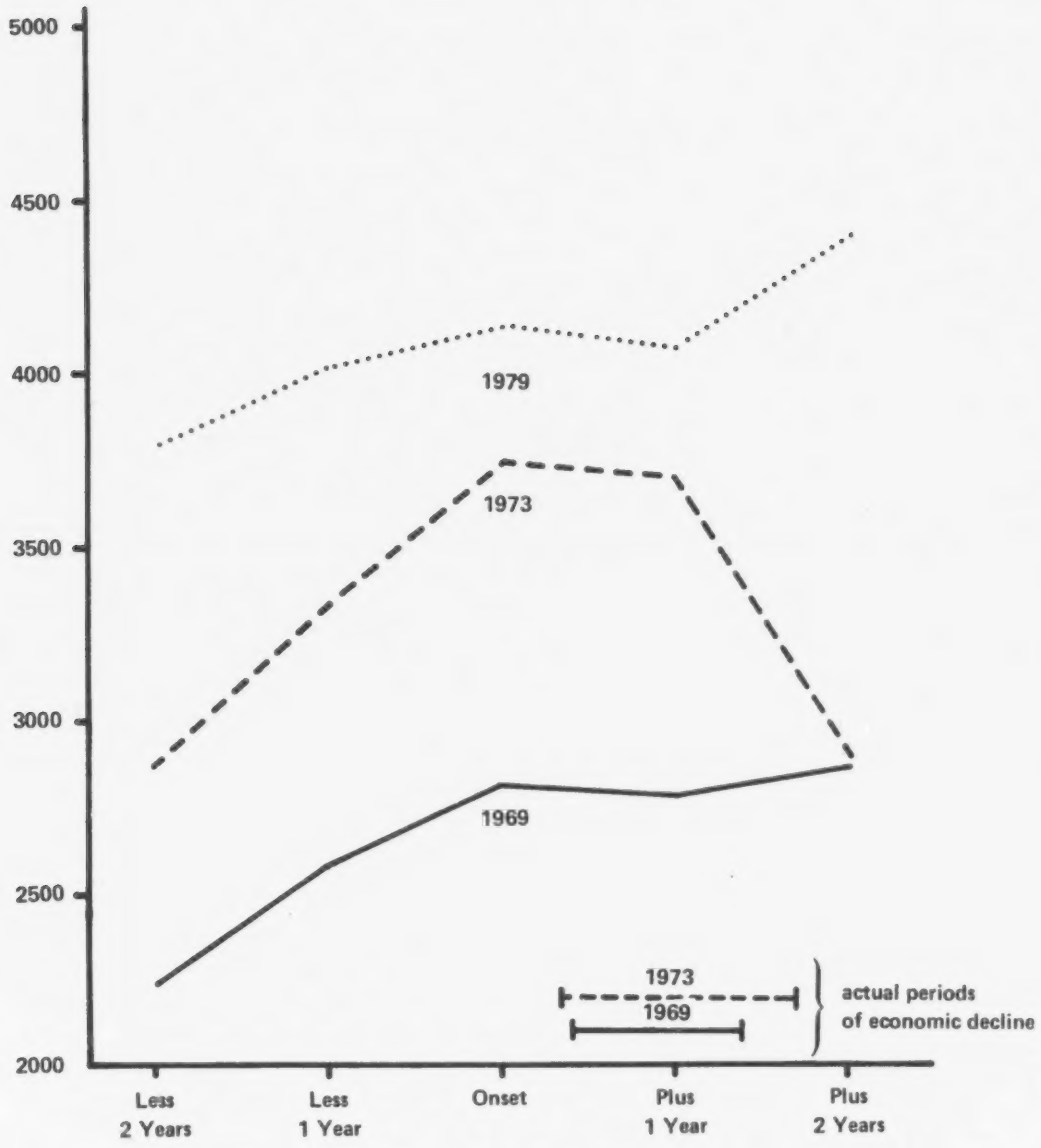
BEHAVIOR OF TENNESSEE UNEMPLOYMENT RATE
IN RECESSIONS



SOURCE: Tennessee Econometric Model, Historical Data and November 15, 1979.

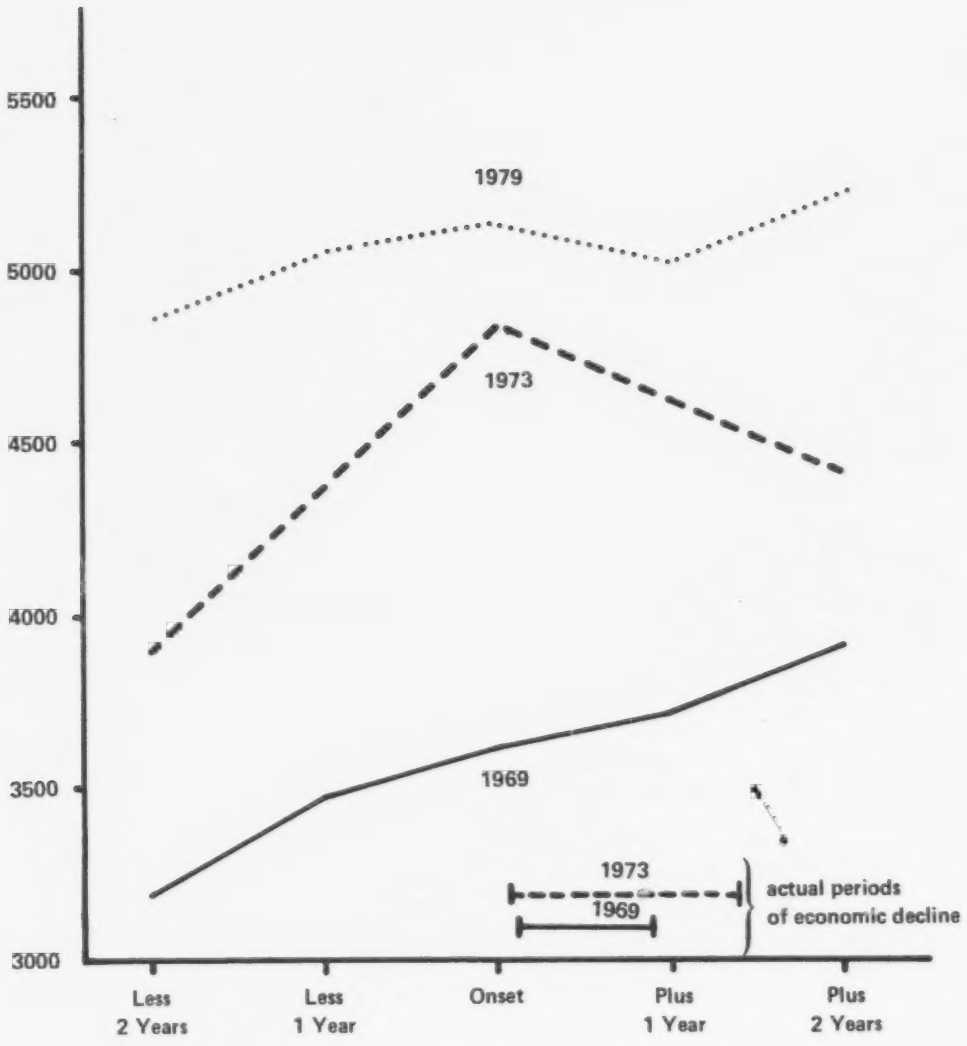
FIGURE 10

BEHAVIOR OF TENNESSEE DURABLE GOODS OUTPUT
IN RECESSIONS
(Millions of 1972 Dollars)



SOURCE: Tennessee Econometric Model, Historical Data and November 15, 1979.

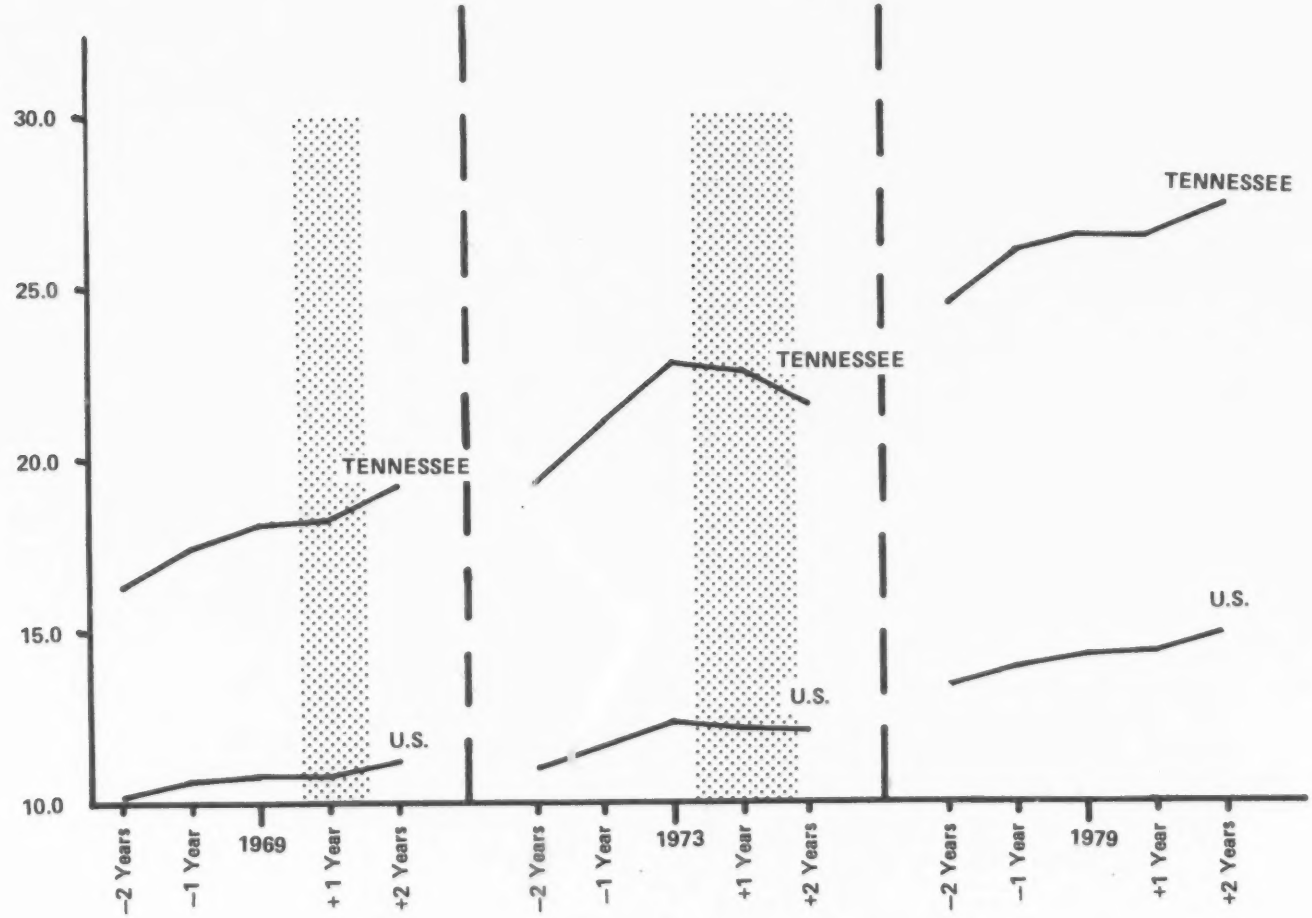
FIGURE 11
BEHAVIOR OF TENNESSEE NONDURABLE GOODS OUTPUT
IN RECESSIONS
(Millions of 1972 Dollars)



SOURCE: Tennessee Econometric Model, Historical Data and November 15, 1979.

FIGURE 12

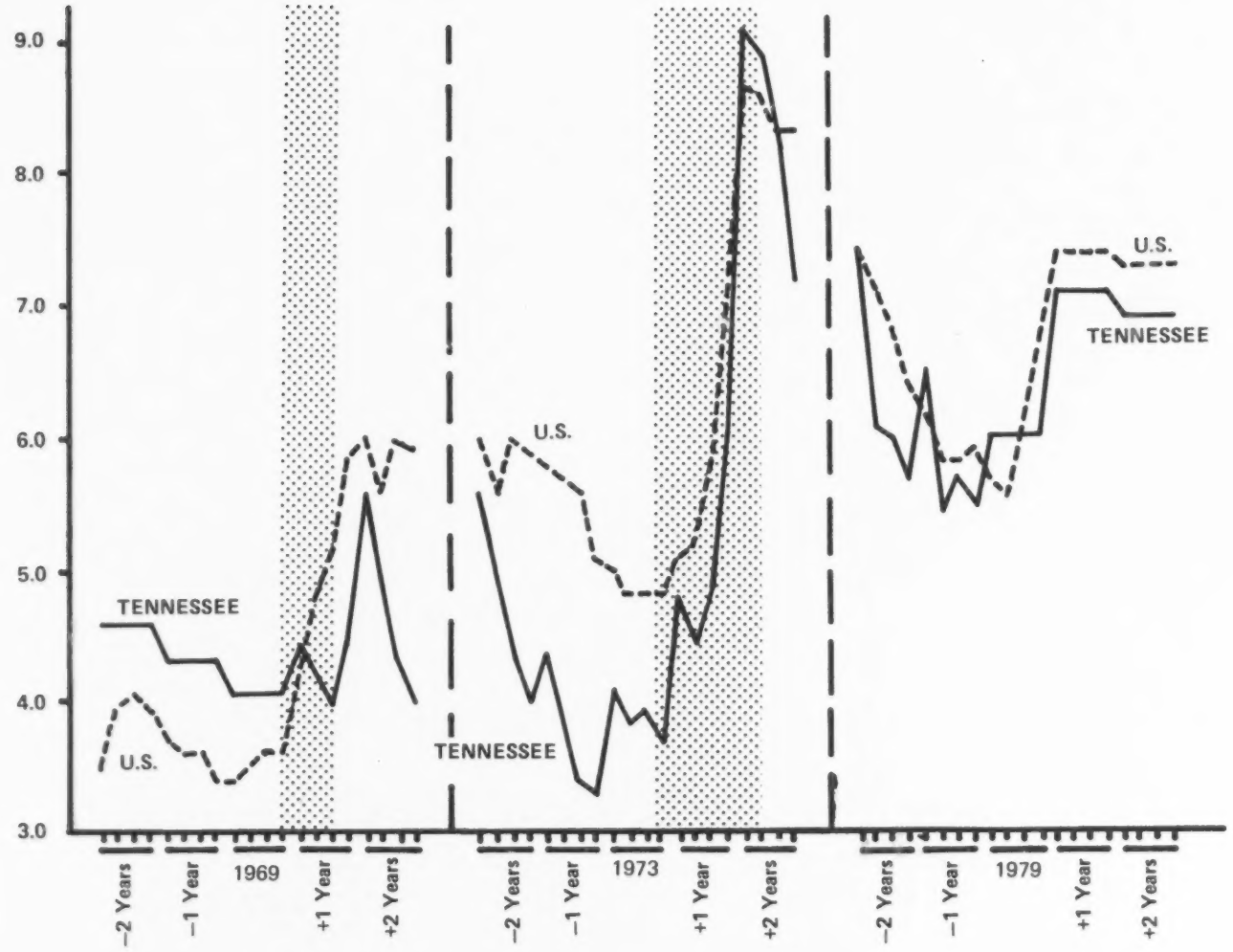
RELATION OF TENNESSEE GROSS STATE PRODUCT (in 1972 Dollars) TO U.S. GROSS NATIONAL PRODUCT
(Tennessee, Billions; U.S., Hundred Billions)



SOURCE: Tennessee Econometric Model, Historical Data and November 15, 1979.

FIGURE 13

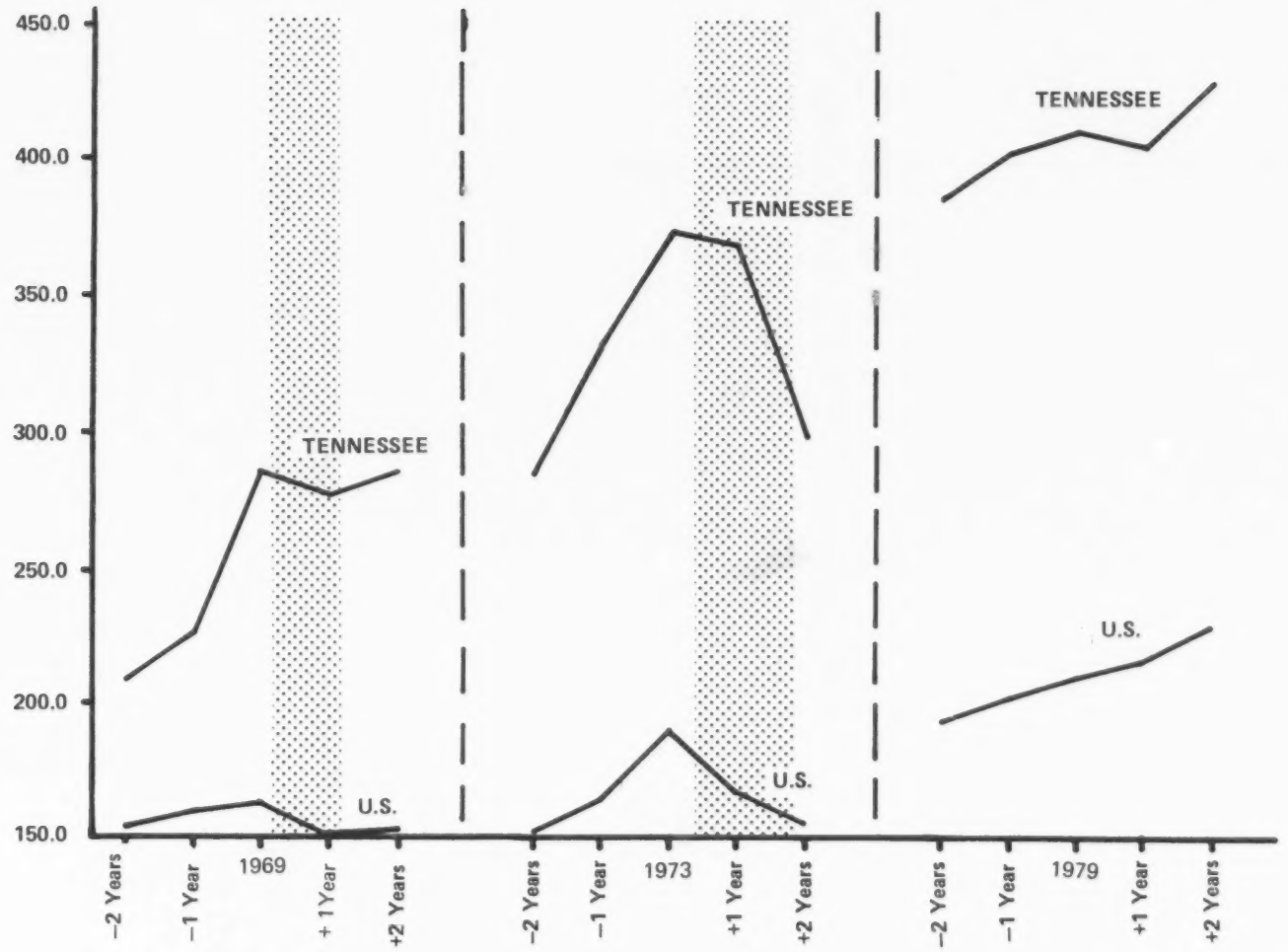
RELATION OF TENNESSEE UNEMPLOYMENT RATES TO U.S.
(Percent)



SOURCE: Tennessee Econometric Model, Historical Data and November 15, 1979.

FIGURE 14

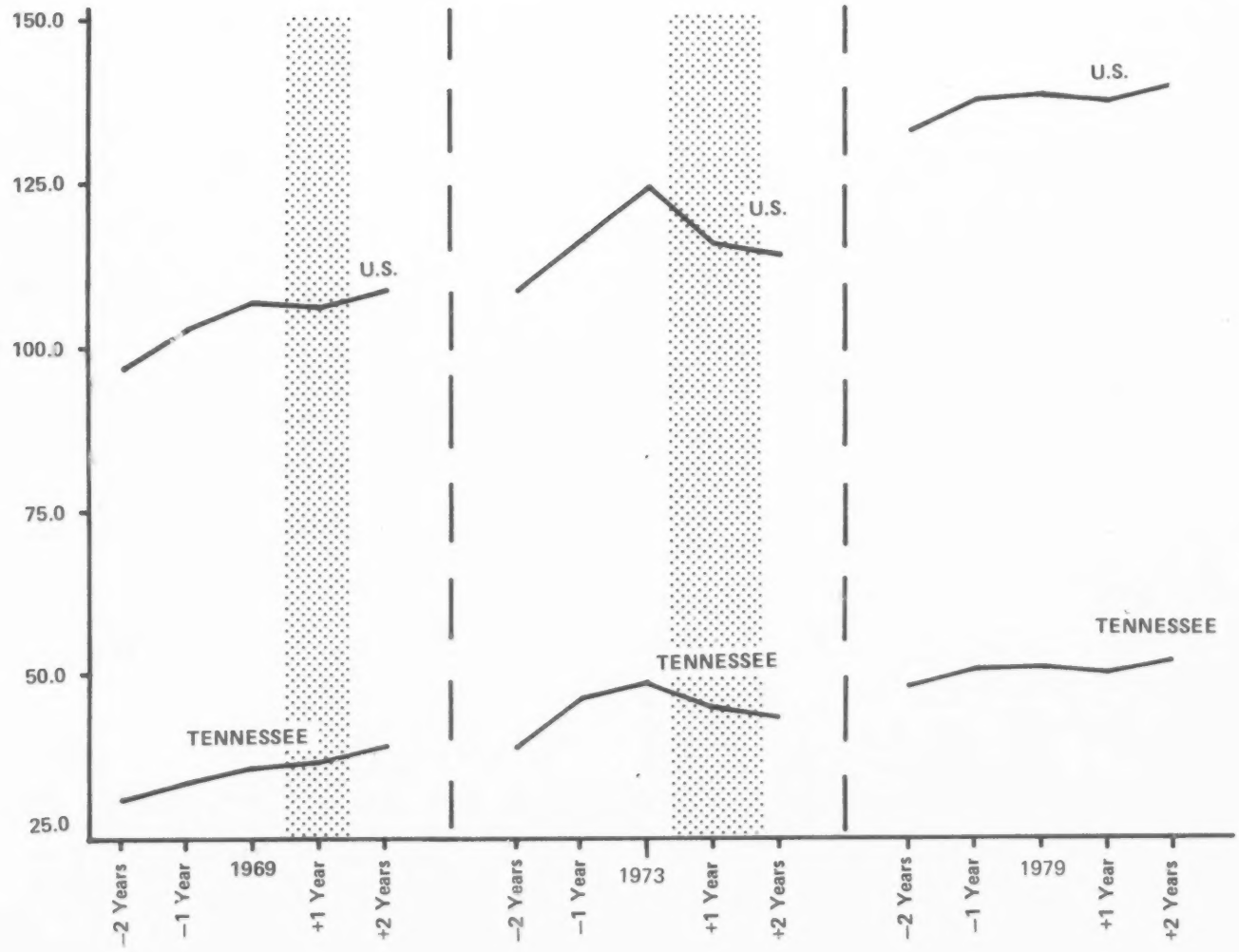
RELATION OF TENNESSEE DURABLE GOODS OUTPUT (in 1972 Dollars) TO U.S.
(Tennessee, Ten Millions; U.S., Billions)



SOURCE: Tennessee Econometric Model, Historical Data and November 15, 1979.

FIGURE 15

RELATION OF TENNESSEE NONDURABLE GOODS OUTPUT (in 1972 Dollars) TO U.S.
(Tennessee, Hundred-Millions; U.S., Billions)



SOURCE: Tennessee Econometric Model, Historical Data and November 15, 1979.

CHAPTER 3

THE OUTLOOK FOR SPECIFIC INDUSTRY GROUPS IN THE TENNESSEE ECONOMY

This chapter contains synoptic reviews of the detailed sectoral reports which are presented fully in Volume 2. The most crucial data and analysis relevant to each sector are summarized here to provide a single, short document which is quickly digestable. Materials presented in this chapter are organized for each of the following industry groups:

manufacturing
energy
finance, insurance, and real estate
transportation, communications, and public utilities
trade and services
agriculture
state and local government

Manufacturing

Manufacturing currently accounts for 35 percent of the State's real output. This amount has remained relatively constant since 1969. This has occurred despite a fall in the relative numbers of manufacturing jobs which have declined from 35 percent in 1969 to 30 percent in 1979. Manufacturing represents a sector which has provided an increasing source of output dollars despite its decreasing labor input. Compared nationally, the Tennessee proportion of labor employed in manufacturing is greater than the national share in manufacturing. As a result, manufacturing occupies a central, key role in the Tennessee economy.

At the same time, within Tennessee manufacturing there has been a relative shift from nondurables to durables. Durable goods manufacturing employment as a percent of total manufacturing has moved from 42 percent to 45 percent in the span of 1969-1979. While this is consistent with an increase in labor efficiency noted above, it represents a growing sensitivity to economic fluctuations. This arises because durable goods production has been historically more sensitive to the business cycle than has nondurable goods production. On the basis of these facts, central concern in a year of anticipated downturn should be focused on manufacturing. A short-run analysis of the industry provides this view.

Short-run analysis of the State's manufacturing sector indicates that Tennessee's experience with business cycles has generally been slower to decline during periods of national downturn and faster to increase during periods of upswing. However, the evidence has not been perfectly consistent. In the recession of 1969-1970, while the U.S. lost 4.0 percent of its manufacturing employment, Tennessee lost only 1.1 percent. In the upswings of 1971-73 and 1975-78, while the U.S. was gaining 8.2 percent and 11.0 percent, respectively, Tennessee out-gained the U.S. with growth rates of 12.8 percent and 13.8 percent, respectively. In the 1973-75 downturn, however, the U.S. lost only 9.1 percent of its manufacturing employment, while Tennessee declined by 11.6 percent.

The Tennessee Econometric Model has computed the reasons for this (possibly) growing susceptibility to the cyclical downturn in terms of relative cost positions of the State's manufacturing output.

These have been measured by such variables as relative taxes, wages, and energy costs among others. The current forecast reflects such factors in "passing" the national downturn through to Tennessee.

The short-term forecast, considering these factors, suggests that Tennessee growth (decline) in most cases of manufacturing industry is in excess (less than) of that for the nation. Employment is expected to decline, generally, but much less rapidly than in 1973-75. The forecast anticipates a loss of 10,000 jobs during 1978-1980 in durable goods, relative to 1,600 jobs in nondurables. However, compared to 1973-75, the loss of 10,000 jobs is small relative to the earlier durable goods loss of 36,800 jobs. Similarly, the current anticipation of 1,600 fewer jobs in nondurables is significantly smaller than the 23,600 jobs lost in 1973-75.

Within the durable goods sector, it is expected that the hardest hit will be fabricated metals producers, followed in order by nonelectrical machinery, furniture and fixtures, electrical machinery, and finally, transportation equipment. Within nondurables, apparel is expected to increase its employment. So also, by a small margin, employment in the paper industry and the other nondurable goods industries is expected to increase. The remaining nondurable industries will likely decline. The most severe of the reductions in the labor force will be textiles, losing 2,200 jobs and then followed by smaller declines in food, chemicals, and rubber products.

Long-run analysis of the State's manufacturing sector suggests that 74,300 new jobs will be added to the projected low in 1980 by 1988. This rate is only slightly slower than the historical periods

of increase--71,700 jobs in the interval from 1960 to 1965, 77,300 jobs in 1965-1970, and 63,300 jobs in 1975-78.

Durable goods are projected to continue their increase relative to nondurables. From 1979 through 1988, durable goods employment is forecast to grow by 19 percent. This is more than double the growth in nondurables over the same period (8 percent). These growth rates are, nonetheless, slightly misleading because of the larger current size of the nondurables work force. Absolute levels of employment are projected to grow by about 44,500 in durables and by 23,000 in nondurables.

Energy

In Tennessee, as in the nation, energy remains a question with uncertain answers, as the recent OPEC embargo and the Iranian crisis have demonstrated. Before 1970, energy was considered abundant, and its relative price was low and declining; but then the nation's domestic production of natural gas and oil peaked and subsequently began to decline. Coupling this problem with sizable international oil price increases has intensified energy supply problems in the domestic markets of the United States. Many of the uncertainties of the energy question are as political as they are economic, and this element has increased the difficulty of making energy price and consumption forecasts.

Tennessee energy forecasts are based on a set of national forecasts which assume the following: after announced December 1979 increases in foreign oil prices, no major additional international shocks are anticipated; prices of domestic oil and natural gas prices

will be decontrolled by 1982 and 1985, respectively; Mexican natural gas imports will start in 1981; and the flow through the Alaskan pipeline will increase to 2.0 million barrels per day by 1981. Using these assumptions, national projections forecast the proportion of U.S. energy coming from nuclear and coal to rise and the proportion coming from oil and natural gas to decline.

Over the next decade, trends show a substantial slowdown in the consumption of energy and a continuing increase in relative energy prices. The anticipated slowdown in the growth of gross state product in 1980, along with projected hikes in international energy prices, should keep energy consumption in BTU's virtually stable from 1979 to 1981. Among the sources of energy consumption, electricity displays the quickest rate of growth, increasing approximately 2.5 percent per year on average, more rapidly in residential use and less rapidly in industrial use. Total natural gas and gasoline consumption are not expected to change over this period. Both coal and fuel oil display some growth, although the growth rate is limited when compared to their recent rapid rates of increases. After 1981 the rates of growth in consumption of each of the energy sources except for natural gas quicken to keep pace with the State's rate of general growth and to adjust to less unfavorable changes in relative energy prices. Total electricity consumption will display the highest long-run rate of growth at about 3.5 percent. Over this period, however, the industrial subsector will grow the quickest, and the commercial subsector, the slowest. Although industrial natural gas consumption may grow slightly, it will be offset by declines in the residential and commercial sectors, so that total natural

gas consumption displays essentially no growth in the 1982-to-1988 years. The coal, gasoline, and fuel oil sectors should continue to display weak (but positive) growth in consumption during these years.

Over the 1979-to-1981 years gasoline and fuel oil prices are projected to grow the highest at 61 and 45 percent, respectively. The remaining energy prices are expected to grow about 50 percent faster than the price deflator of gross state product. After 1981, the growth rates of prices in each of the energy sectors, except for natural gas, are expected to slow. They will grow only about 30 percent more rapidly than the gross state product price deflator. Natural gas prices continue to grow 50 percent faster than the output deflator as they are decontrolled and allowed to reach market-determined levels.

An important issue in the energy debate is the relationship between energy and economic growth. Analysts in the last several decades concluded that the energy-to-output ratio is a constant. As a corollary, therefore, they would also conclude that when the growth rate of energy utilization is reduced (for energy conservation), the growth rate of output will decline proportionately. Many analysts continue to believe this relationship holds, but over the forecast years, the Tennessee Econometric Model projects that the State's energy-to-output ratio will decline in response to the higher energy prices and supply limitations. In short, considerable efficiencies can be obtained in the use of energy by the State's firms and households without a concomitant reduction in the State's rate of economic growth.

Finally, although a national energy policy remains to be formulated, movement toward a national plan does not imply that a state government cannot influence the level of energy consumption within its boundaries. In California, for example, the state has enacted various incentives ranging from tax credits to building code revisions that stress the use of solar energy. Such policies have helped make California the most "solarized" state in the nation.

The forecasts indicate that Tennessee's economic growth is compatible with lower levels of energy consumption. If the State were to adopt policies similar to those of California, the Tennessee State government could play a guiding role in reducing its economy's energy intensiveness. Policies that stress conservation, such as tax credits, could also be developed. A program such as an energy extension service would be a useful means of informing the public about the possible conservation measures. Conservation investments might also be spurred by State loan guarantees.

Finance, Insurance, and Real Estate

The Tennessee Econometric Model forecasts output, employment and wages for the Finance, Insurance, and Real Estate (FIRE) industries as one sector. The Model, however, breaks other relevant variables in the sector forecast into component parts, providing separate forecasts of the aggregate commercial bank balance sheet, the aggregate savings and loan balance sheet, income, compensation within the financial industry, and employment in the construction industry.

The FIRE sector is likely to behave substantially differently during the current recessionary trend than during the most recent recession of 1973-75. Growth in the sector during 1980 will be equal to the average State growth, but in 1981 growth in the sector will lag Tennessee growth. In real terms the FIRE sector will decline slightly in 1980 and will grow but at slower rates than the aggregate of other sectors during 1981. The sector appears to be better insulated from the downturn than it was in the previous recession.

Employment growth has been stronger in this sector than for the State economy during 1979. While falling to the State average during 1980, it will regain its stronger growth again in 1981. This pattern is somewhat unlike the previous recession when employment growth in the FIRE industries was weaker, declining slower than average in the downturn and increasing slower than average in the upturn. Wages across the sector will be reduced more than the state average during the downturn, but they will rebound in 1981, with slightly more strength than the general economy.

In sum, the next two years are expected to be a period of slow growth and disappointing earnings for the firms in these industries. Sector activity is likely to be below that of the State economy with high interest rates being an important contributor to the poor showing.

Long-term growth in the sector's output is forecast to be slower in both real and nominal terms than growth in the general State economy. This results even though employment is expected to keep pace with State employment growth. This slower growth in output is therefore coincident with lagging growth in value added per worker in FIRE. The latter is noticeably below the State average. Finally,

the real value of average wage compensation will grow slightly faster for the FIRE sector than for the State.

Finance. Low profitability in the finance industries may result over the next two years because interest rates are now high and are expected to remain relatively high. Resources available to firms in the industry are likely to be restricted as deposits grow in a sluggish fashion. Loan demand is also likely to be low as consumers postpone the purchase of some durable goods, such as automobiles. The combination of these factors may lead to a slight increase in the loan-to-deposit ratio as firms seek to offset the high cost of funds. Nonetheless, profitability is likely to be low.

Long-term trends in the finance industry appear more favorable. Strong deposit growth is anticipated so loanable funds should be available. Loan demand is expected to grow faster than deposits as healthy manufacturing producers and durable goods consumers create a demand for funds. The loan-to-deposit ratio will rise over the next decade as the loan demand grows faster than deposits. With declining interest rates, the profitability picture in the finance industry should be strong.

Insurance. The life insurance industry is relatively immune to short-term fluctuations, so this industry will provide relative stability to the rest of the Tennessee economy over the next two years. The stability results because business downturn will produce no significant changes in rates of policy renewals and these provide a major portion of income for insurance companies. In fact, about 80 percent of premium income is provided from this relatively stable source. Sales increases along with high investment incomes (from

high interest rates) hold up the remainder of the industry's income. Robust sales in post-recession 1981 should further stimulate income as the economy moves beyond the short-run forecast.

Long-term prospects for the life insurance industry appear favorable as the result of several trends. Annuity premiums, which are expected to grow faster than total premiums over the next decade, are one reason. Inflation, real economic growth, and increased attractiveness to investors are other causes of this rapid growth in premiums. Tennessee's growth in premium volume has outstripped the nation over past years. This pattern can be expected to continue and real increases in premiums are anticipated in Tennessee over the long term.

The property and liability (P&L) insurance industry in Tennessee closely follows national trends. Nationally, net income in 1979 will reach record levels, though the income growth rate has declined. This decline in income can be expected to continue as the P&L industry is more affected by economic cycles than the life insurance industry. The current recession will be less severe on the P&L business than the most recent 1973 recession, but no nominal income growth is expected for 1980. Income will grow moderately in 1981, declining in real terms. Real growth in premiums will likely be negative during 1980 but will show some real gains in 1981.

Real Estate. Demographic trends, interest rates, availability of mortgage funds, and consumer expectations are key determinants of the demand for housing. The demand for housing will show moderate real growth over the 1980's and should signal a steady demand for new housing. Nevertheless, variations across the state are ex-

pected to result in uneven growth as changes in population and income are distributed unequally.

The sudden increase in interest rates has discouraged housing starts over the past six months. If high rates continue during 1980 with strong expectations that they will fall thereafter, housing demand will remain weak. However, as rates moderate or if people anticipate rates will remain high for an extended period, demand will increase. The forecast suggests that demand will begin to pick up under these circumstances by the third quarter of 1980. Pent-up demand (because of current high interest rates) will further lead to significant demand increases in late 1980 and in 1981. Availability of mortgage funds is, of course, a necessary ingredient in these housing purchase transactions. High cost mortgage funds are anticipated to remain available in Tennessee, though they may be less available than in recent years.

Interest rates, availability of mortgage funds, and even consumer expectations are heavily dependent on activities of the federal government and Federal Reserve. Thus, forecasts in the real estate sector are difficult because assumptions must be made on how these agencies will behave. The recent Federal Reserve Board policies provide hope for the industry with steady real estate activity over the 1980's. In the short-run, weak demand through the second quarter of 1980, with strengthening of demand in the second half of 1980 and 1981, seems most likely.

Transportation, Communications, and Public Utilities

Although a variety of different industries comprise the transportation, communications, and public utilities sector (TCPU), the

major economic characteristic that holds this sector together is that each of its industries is subject to some form of government regulation. These regulations control the entry into and exit of individual firms from the industry. They determine the level and types of rates a firm can charge. Moreover, except for the transportation segment of this sector, price changes in each of the industries usually has little short-run influence on demands for industry output. Finally, many of the outputs produced within this sector display little variability over the business cycle. Water, as an example, is consumed in relatively constant proportions in both recessionary and inflationary periods. These characteristics stabilized this sector's year-to-year growth, making it, in general, easy to forecast. Support for this conclusion can be developed by comparing the business cycle patterns of this sector in Tennessee and total gross state output from 1969 to 1978. In general, TCPU output displayed less of a business cycle than did gross state product over this period.

The 1972 dollar value of TCPU output is forecast to grow slowly in both 1980 and 1981. Although the state moves into a serious downturn in 1980, TCPU's growth rate in output falls only slightly relative to its 1979 level. In addition, as the State's economy rebounds strongly in 1981, TCPU's output increases very little. Wages and salaries in TCPU continue to grow more rapidly than the average increases for all of Tennessee's employees. This is a reflection of the greater unionization of this sector relative to other sectors. Although TCPU's employment growth is projected to slow relative to 1979 in both 1980 and 1981, it remains slightly positive. In addition,

the same general relationship holds between this sector's employment and overall employment as for TCPU's output and gross state product in these years.

After 1981, TCPU's output in 1972 dollars is forecast to grow moderately (at about 2 percent per year on average), which is only about two-thirds as rapid as the growth in gross state product. As the rate of inflation slows in 1982 and 1983, the increase in this sector's wages and salaries also slows. After 1983, its wages and salaries are forecast to grow somewhat faster than the average for all Tennessee industries. Given the slow growth in TCPU's output and the rapid increase in its wages and salaries, a consistent finding is that employment grows very slowly through 1988.

In general, this forecast indicates a period of slow but constant growth for the transportation, communications, and public utilities sector over the 1980 to 1988 years. The decline in real output that is expected in 1980 for the state will have little influence on this sector.

Over the next decade many changes will occur in the TCPU sector, some of which are already underway. Federal deregulation started in the airline industry and is expected to continue and spread to other regulated industries. Trucking is likely to be the next industry to be deregulated. In general, the airline deregulation has been beneficial since it has smoothed the scheduled supply of air service among areas and has decreased prices. Similar benefits can be expected when trucking and other regulated industries are deregulated.

Many changes will also occur at the area's major utility. TVA is currently exploring alternative electrical rate structures that promote conservation in the use of electricity. The impacts of these alternative rate structures on the State's industries and households have yet to be determined. If it is found that the alternative rate structures will have adverse effects, policies can be developed that will soften their impacts on the State's firms and households. In addition, it now appears that TVA will bring several nuclear power plants on line in the next decade. The State will likely become involved in assuring that these plants can be operated within reasonably safe limits.

Currently Tennessee is one of the few states that has yet to adopt the 80,000 pound load limit for trucks recommended by the federal government. Most of the states that surround Tennessee have adopted this limit. If Tennessee chooses not to adopt this limit, trucks will either avoid the state or move through "underloaded." Further evaluation of the impact of this result should be undertaken.

Similar issues abound in the legalization of "double bottom" trailers, which have been permitted in many surrounding states.

Trade and Services

Nationally, it now appears that no real growth will occur in retail sales in 1979. This is a leading indication that the national economy is approaching a recession. The major reason that retail sales have been able to match even 1978 sales is consumers' willingness to spend out of savings. The current national savings-to-income

ratio is only 4.1 percent, which is lower than the average of 6 percent and is considerably lower than the 10 percent ratio that existed at the trough of the last recession. If the savings/income ratio were to return to a level as high as 7 percent, consumer spending would be reduced nationally by $45 billion. The low saving ratio is probably a reflection of consumers' willingness to spend today before inflation eats up their budget. Noted in Chapter 1, this is, in fact, an effect of the inflationary psychology which the Fed is trying to eliminate. The persistence of such high consumption during the move into the downturn is one of the factors on which the forecast of adopting the "Volcker-prong 2 policy," continued high interest rates as put forth in Chapter 2, page 25, is based. With the predicted movement of the economy into a more serious downturn next year, however, consumers will reduce spending as the unemployment rate increases. This will intensify the recession further but is the signal needed nationally to stem the inflationary hold on the economy. Under this situation, national retailers justifiably were concerned about Christmas and continue to be concerned about 1980 sales.

Tennessee's real retail sales are projected to decline slightly in 1979. It is a slowdown in the State automotive sales that accounts for this year's negative growth in retail sales since nonautomotive sales display slight growth. It appears that the slowdown in the State's growth and, possibly, uncertainties about gasoline supplies have made Tennesseans unwilling to make the "large ticket" automobile purchases.

Retail sales in real terms are projected to decline by about 1 percent in 1980 with the culprit once again being a decline in automotive sales. In addition, real nonautomotive sales also decline slightly. As the State's overall level of economic activity quickens in 1981, real retail sales quicken substantially as automobile sales rebound. Retail sales growth in 1981 is faster than in 1978, which was a good year for retailers. Nevertheless, from the end of 1978 to 1981, little overall growth is projected for the retail trade sector, indicating that these years will be incredibly slow-growth years for the industry.

In addition, nominal retail sales growth in 1979 and 1980 is expected to be less than nominal growth in disposable income. This reflects a trend that has been evident in national data for some time but, until this forecast, was not visible in the Tennessee data. This trend suggests that retail sales are becoming relatively less important in total income due to inflation and a shift into service-type consumption.

Throughout the remainder of the forecast period, real retail sales are projected to grow moderately at around 3 percent per year, with automobile sales growing slightly faster and nonautomobile sales growing slightly slower than total sales. Since gasoline consumption is forecast to grow slowly, the growth in the automobile stock indicated above implies that it must be more fuel efficient. Home furnishings and appliances will probably be one of the quickest growing of the nonautomotive retail sectors as a large number of "baby boom" families set up new households.

Trade employment grows only about 50 percent as rapidly as Tennessee total employment from 1980 to 1984. After 1984, however, trade employment is projected to grow less rapidly than overall employment. Throughout the forecast years, wages and salaries are expected to grow less rapidly in the trade sector than for all Tennessee employees.

Real service output grows slowly at 1 percent in 1980 as the State's economy slips into the downturn but then quickens to 2.7 percent in 1981 as the economy expands once again. Employment in the service sector continues to expand at about 2.6 percent on average in these years.

Although the forecast for real service output in 1980 and 1981 is lackluster, the longer term forecast through 1988 is for steady growth at a rate slightly less than the rate displayed by the overall economy. In addition, moderate growth is expected in service employment at about 2.25 percent per year from 1982 to 1988.

Over the next decade, a number of economic and demographic trends will influence how families spend their incomes. Inflation will be a major factor. As inflation continues over the next decade, not only will the general rate of inflation be important but also the rates of inflation within individual consumption sectors. For example, the rate of inflation in durable goods has been less than the rate on service-type goods. This should cause consumers to shift to goods whose prices have displayed little relative growth. Taxes are also influenced by inflation. As incomes rise due to inflation, taxes tend to increase due to the progressive nature of the federal tax system. Not only must a family's income rise to match inflation,

but it must also increase to offset the additional taxes that must be paid if a family's purchasing power is to remain constant.

Demographically, as the "baby boom" population cohort "ages," the number of new households will continue to grow faster than total population. Therefore, the demand for homes and furnishings should continue strong well into the 1980's. In addition, this group will be better educated and will probably have higher disposable incomes. Unless rising energy costs completely capture this additional income, the "baby boom" cohort should make good consumers during the 1980's.

Agriculture

Performance in the agriculture sector is affected by factors which influence the demand and supply for specific farm commodities. On the demand side two important factors are the general economic slowdown of 1980 and the partially compensating export market.

The economic slowdown will result in a decline in per capita disposable income. Dollar expenditures on food and beverages may not increase enough to offset expected price increases during the slowdown so per capita food consumption may fall. However, the experience will be mixed with some agricultural products affected more than others. Many of the food products will experience little demand fluctuation because they are price inelastic. Demand for some products--retail meats, expensive food items, convenience products, meals away from home--among others, is likely to decline.

High export demand will buoy the overall demand for agricultural products and prevent fluctuations in agricultural prices that might have occurred otherwise as a result of good crop yields and relatively

low domestic demand. The agriculture sector yields a significant positive net trade balance during fiscal year 1979. This should continue during 1980 as crop yields overseas have been poor, generally.

On the supply side, agriculture is likely to experience large input price increases. The main concern again this year is with uncertainty regarding supplies and prices of petroleum products. The short-term outlook for petroleum products, analyzed above, is for continued tightness of supply and significant real price increases of 8 percent per annum. Although electric prices will also increase, the anticipated change is less than for petroleum. Modern American agriculture has developed on the basis of cheap energy and substantial yield effects will result from restricted energy supplies or appreciably higher energy prices. The federal government can be expected to intervene to ameliorate energy shortages in critical areas at least over the short term. Current federal regulations give the agriculture sector high priorities for receiving natural gas and petroleum.

Other input prices are also likely to rise over the short term. Price increases, perhaps slightly lower than the CPI increases, are anticipated for pesticides. Significant real price increases can be expected for fertilizers.

Farm machinery prices may also rise as a result of higher production costs. However, high interest rates may lower demand, leaving price somewhat lower to those who can afford financing. The net effect probably decreases the demand for machinery and to the extent that farm incomes fall, demand for machinery will be further discouraged.

Over the long term the agriculture sector may provide some relief against rising costs from higher petroleum prices. Replacement of commercial fertilizers (many using petroleum as an input) with organic wastes is one option in maintaining crop yields while reducing petroleum use. The use of new and existing crops and residues as new energy sources is another small-scale energy option open to farmers. Research and development programs to facilitate these options now appear to be given high priority by research being conducted by the U.S. Department of Energy and private industry.

The short-term economic forecast for Tennessee calls for substantial increases in cash receipts from farm marketings of all crops during 1980 and 1981. The most important products, in order, will be soybeans, tobacco, cotton, corn, and greenhouse and nursery products. Cash receipts from other agricultural products will also increase over the next two years, though less than for crops. Receipts from dairy products will grow fastest, followed by poultry and eggs and then meat animals.

Value added from agriculture will grow during 1980 as overall gross state product declines slightly. In 1981, the state economy will rebound with more strength than the agriculture sector. Over the full span of years, gross state product will grow faster from 1979 to 1981 than will the agriculture sector.

Agricultural employment is expected to decline during 1980 and then rebound slightly during 1981. A small decrease in total agricultural employment is forecast for 1979-1981.

Over the 1980's, growth in value added for Tennessee agriculture is expected to be lower than for gross state product. There-

fore, agriculture will decline as a percentage of gross state product over the decade. Nonetheless, there will be some real increase. Employment in agriculture is also expected to grow noticeably slower than nonagricultural employment. Both results continue the long-term trends that have characterized U.S. agriculture as a composite industry.

Growth in cash receipts will be uneven. Meat animals are likely to exhibit the most rapid growth in the decade, followed by poultry and eggs. Crops and dairy products will show lower than average cash receipts growth during the 1980's.

State and Local Government

In real terms, the resources of the public sector will grow only marginally over the next two years unless new revenue sources are exploited. The Tennessee State government will experience a decline in tax revenues when these are corrected for inflation. Real local government tax revenues are in a position, on the contrary, in which they must grow, probably through tax rate changes. This is because local governments provide selected services whose demands do not fluctuate much with recession or inflation. As their costs rise in pace with the remainder of the economy, these governments cannot cut back on services. Consequently, they are likely to be forced to raise tax revenues to meet service demands. In contrast, greater budget flexibility permits the State to avoid similar tax increases by making carefully designed cutbacks in expenditures.

State tax revenues will grow at a slow nominal rate during fiscal years 1980 and 1981. The slow tax growth will result from the

slowdown in growth of gross state product and the concurrent tendency for tax elasticities to decline during a recession. Growth in real local tax revenues will offset decline in state revenues leading to a small real increase for the total of the two over the next two years.

The Tennessee tax structure causes the decline in tax elasticities during a recession. One reason for this decline is that durable goods purchases are postponed, decreasing potential sales tax revenues. Since revenues from selective sales taxes are not responsive to price changes, the absence of growth in physical quantities of consumption makes revenues fall behind nominal income growth. Tax systems more closely aligned to income suffer less from this problem of declining elasticities than does the Tennessee system.

Following the national recession, durable goods sales will pick up and the tax elasticity will again increase. Combined with the post-recession boost in gross state product, the higher tax elasticity will mean relatively rapid growth in tax revenues. Thus by fiscal year 1982, state tax revenues should grow more rapidly.

Over the 1980's, Tennessee State tax revenues will still increase slower than gross state product unless the tax structure is altered. In all likelihood, costs of providing services will at least keep pace with the growth in tax revenues. Therefore, no increase in per capita service levels from state funds can be expected over the decade. Consequently, the trend in federal intergovernmental revenues is important in determining the total per capita services available. A substantial real decline in these revenues could leave both State and local governments financially strapped.

Real State and local government expenditures will grow over the next two years. Local governments, with greater resources available, will exhibit the greatest growth in expenditures. State and local government expenditures, as a percent of gross state product, are expected to remain relatively constant over this time period.

During the 1980's, no growth in the expenditure share of gross state product is anticipated. Any changes in expenditure patterns are likely to be reflected in the mix of expenditures rather than the overall availability of service levels. Demographic changes, for example, may indicate declining education expenditures and rising health, particularly medicaid, costs.

State and local government sector wages have grown less rapidly in the past decade than wages and salaries for all industries and for federal civilian employees. This decline is explained by trends in public funds. These funds have faltered in times of economic stagnation or downturn and they have not recovered when economic activity has increased. The current recession should continue this trend, making real wages decline. However, failure of average annual state and local employee wages and salaries to keep pace with private industry wages and salaries has serious implications. Governments seeking to employ and retain competent employees may not be able to do so.

Average State-local government employment is expected to grow at a slower pace during the 1980's compared with previous decades. Growth rates in employment have tended to be above average in recessionary periods of the 1970's and this short-term tendency is expected to continue even though to some lesser extent in the current economic

slowdown. State and local employment growth should exceed 2 percent through 1981 and then remain below that level for the next half-decade.